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THE ARCHITECTURAL RECORD

1936

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ARCHITECTURAL USES OF CONCRETE • WORK OF ANTONIN RAYMOND

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THE ARCHITECTURAL RECORD

VOLUME 79 NUMBER 1 JANUARY, 1936

CONCRETE BOATHOUSE OF SHERMAN PRATT, NIAGARA ISLAND, GANANOQUE, ONTARIO, CANADA. John Walter Wood, Architect. Photograph by F. S. Lincoln. **Frontispiece**

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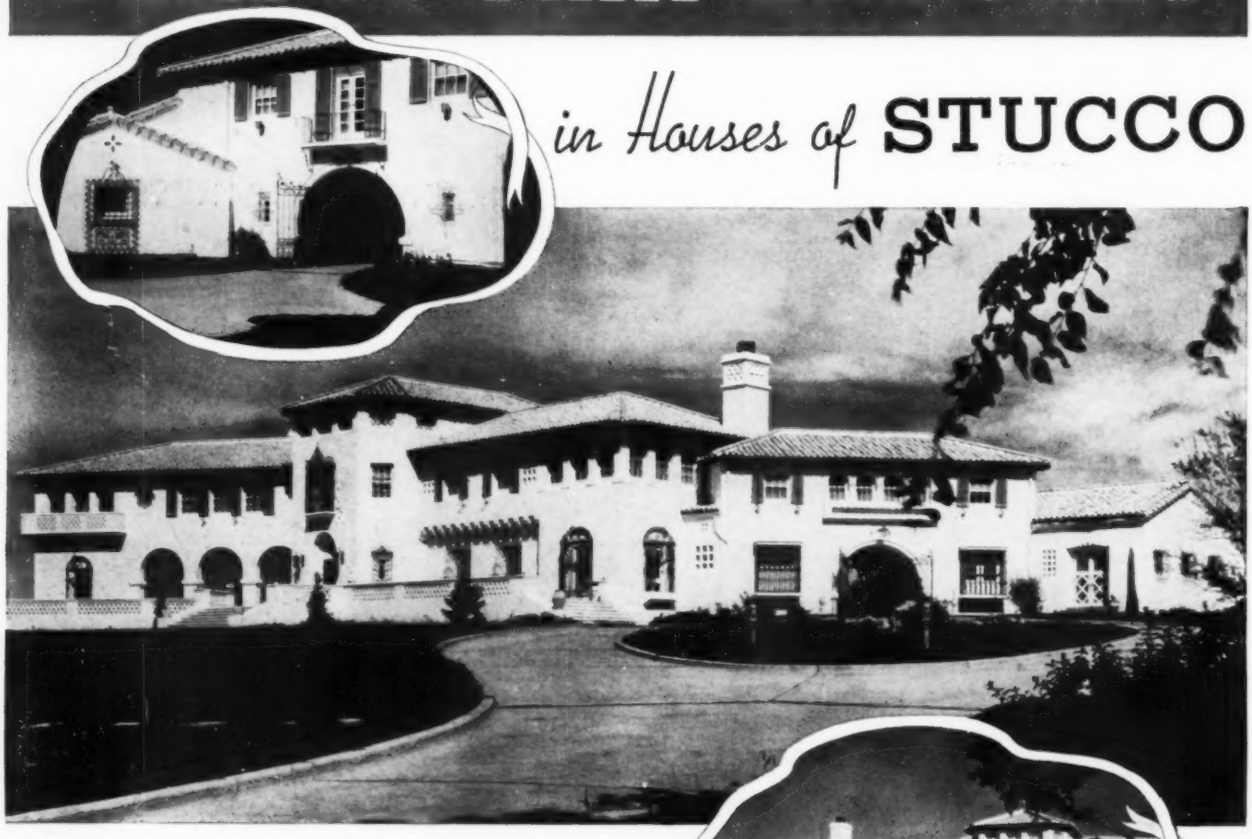
Published monthly by F. W. DODGE CORPORATION, 115-119 West 40th Street, New York. Truman S. Morgan, President; Sanford D. Stockton, Jr., Secretary; Howard J. Barringer, Treasurer. Yearly subscription: United States and Possessions and Canada, $3.00; Foreign, $5.00; Single Copy, 50c. Member Audit Bureau of Circulations and Associated Business Papers, Incorporated. Copyright, 1936, by F. W. Dodge Corporation. All rights reserved. Entered as second class matter May 22, 1902, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A.

BEAUTY THAT ENDURES

in Houses of STUCCO



Beautiful example of a stucco finish made with Atlas White. Architects: Atlee B. and Robert M. Ayres of San Antonio. Owner: John A. Brown of Oklahoma City.

☆ Architects Ayres are pardonably proud of this fine home. And so are we, for this is another beautiful stucco job made with Atlas White portland cement.

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For the full story write Universal Atlas Cement Co. (United States Steel Corporation Subsidiary), 208 South La Salle Street, Chicago.

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LOUIS SULLIVAN, PROPHET OF MODERN ARCHITECTURE. *By Hugh Morrison, Assistant Professor, Department of Art and Archaeology, Dartmouth College. The Museum of Modern Art, and W. W. Norton & Company, Inc., 70 Fifth Avenue, New York City.* 391 *pages. Illustrated.* $4

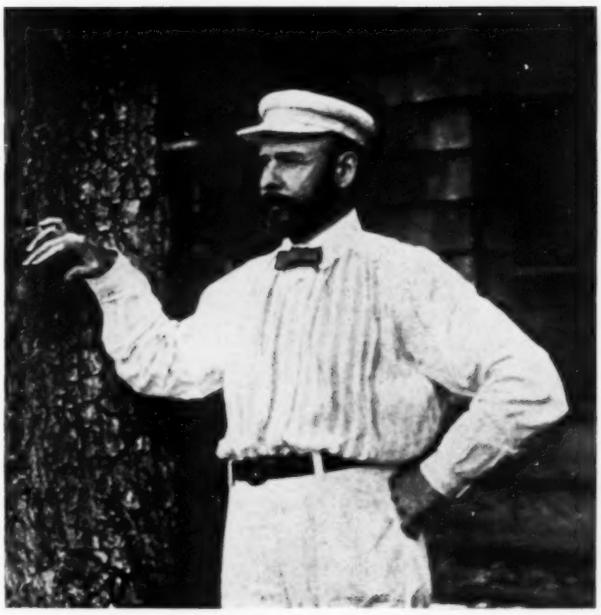
With the development of modern architecture, Louis Sullivan has come to be considered its forerunner.

This book presents a complete story of Sullivan's career as an architectural pioneer—beginning with his single year's study at M.I.T., leading to his employment, at the age of sixteen, in the office of Frank Furness in Philadelphia, then with Major William LeBaron Jenney in Chicago. After completing two years' study at the Ecole des Beaux Arts, he returned to Chicago, where he took charge of Dankmar Adler's office. In 1881, after architectural training and experience of not quite nine years, he became at the age of twenty-four a full partner in one of the important architectural firms in Chicago—Adler & Sullivan.

The story of the work done by this firm over a period of years and the emancipation from accepted notions of design and construction make interesting reading. The most important advance was achieved in office buildings, although many factories and warehouses, also theatres, were designed. A whole chapter is devoted to the Auditorium, the construction of which took three years. It was while Sullivan was working on this enterprise that he took Frank Lloyd Wright into his employ. The partnership of Adler & Sullivan was dissolved in 1895.

Louis Sullivan gave definite artistic form, for the first time, to the tall building (then in its infancy); he looked upon architectural design as the symbolic expression of an emotion aroused by practical conditions. His Wainwright building was the first successful solution of this architectural problem and set a pattern which greatly influenced the contemporary buildings.

From 1895 to the time of his death nearly thirty years later Louis Sullivan's practice declined, since, according to the author, "he was ill-attuned to the spirit of the generation he lived in." His work received more appreciation abroad than in this country. As his commissions became fewer and smaller Sullivan had time to make each one a solution of a particular problem. His last work was a small music store in Chicago. During 1922 and 1923 he wrote "The Autobiography of An Idea"; he had revised "Kindergarten Chats," and also wrote his "System of Architectural Ornament."



LOUIS SULLIVAN

TOWN PLANNING and HOUSING THROUGHOUT THE WORLD. *Edited by Bruno Schwan, Berlin: Ernst Wasmuth.* 438 *pages. Illustrated.* $12

Superseding for the American reader many almost inaccessible foreign reports comes this summary of the present status of town planning and housing in thirty-four countries.

Since the 1931 Berlin Exposition for Town Planning and Housing, there has been close cooperation between the International Federation for Housing and Town Planning, the International Housing Association and the Institute for Building Research of the German Ministry of Labor, which subsidized the investigation, culminating in this well printed, serviceable and readable work. Authoritative reports from each country have been assembled by the editor, Bruno Schwan, manager of the German Society for Housing Reform; each report appears in English, in French and in German, together with a wealth of illustrative material—survey maps, plans, statistical tables and photographs.

ELISABETH COIT.

ART IN THE WESTERN WORLD. *By David M. Robb (Assistant Professor of Fine Arts, University of Minnesota) and J. J. Garrison (Instructor in the Fine Arts, Colgate University). Harper and Brothers, publishers.* 708 *pages, illustrated.* $4

The three pictorial arts—architecture, sculpture, painting—are surveyed separately in scholarly manner. The material is well arranged, with main emphasis on the historical development, materials and technique, as exemplified in the major works of the great artists.

The section on architecture includes several informative chapters on American buildings. Contemporary trends in design are also examined and the work of various practitioners is evaluated with a critical acumen that is all too rare in textbooks on architectural history. The work of Le Corbusier is seen as primarily aesthetic, whereas the utilitarian work of his less famous contemporary, J. J. P. Oud, is singled out for praise in superlatives: in all the low-cost housing projects in post-War Europe, these critics see nothing superior to Oud's workers' houses at the Hook of Holland. The eclecticism of most American architects is found at fault—"The ideal of American architecture is to produce buildings that will be satisfactory to those who pay for them. This is unquestionably an ideal but it is one that is valid only for the architect and his patron."

The book is amply illustrated. It is unfortunate, however, that the few architectural views that have photographic quality serve chiefly to emphasize the tin-type character of other prints. A selected bibliography, a glossary of terms, a chronological table and an index are included.

CALENDAR OF EXHIBITIONS AND EVENTS

January 27-31	Fourth International Heating and Ventilating Exposition; Forty-second meeting, American Society of Heating and Ventilating Engineers—in Chicago.
February 1	Closing date for entries in annual competition for Prizes of Rome. Information obtainable from Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York City.
February 3	New School for Social Research begins series of 10 weekly lectures on Social and Economic Implications of Housing. Wright, Mumford, Bauer, Churchill and others will contribute.
February 18-29	Joint exhibition, Architectural League of New York with American Institute of Decorators—at Fine Arts Galleries, 215 West 57th Street, New York City.
March 4	Symposium on High Strength Constructional Metals; regional meeting, American Society for Testing Materials—at Pittsburgh.
May 1	Closing date, Twelfth Annual Competition for Small Sculptures in White Soap. For information apply National Soap Sculptors Committee, 80 East 11th Street, New York City.
May 5-8	Annual Convention of the American Institute of Architects at Williamsburg, Virginia.
June 6	Opening, Texas Centennial Central Exposition in Dallas, Texas.

NEWS OF THE FIELD

F. D. Amory, architect, formerly of 551 Fifth Avenue, is now located at 15 East 40th Street, New York City.

Peter Copeland, architect and industrial designer, has opened offices at 244 West 23rd Street, New York City.

Don E. Hatch, architect, announces the opening of New York offices at 42 East 50th Street.

Harry I. Hirsch, architect, is now located at 64 Verndale Street, Brookline, Massachusetts.

Kimball and Caldwell, architects and engineers, have opened new offices at 224 North Lorimier Street, Cape Girardeau, Mo.

Chester N. Lowe, architect, formerly of the firm of Lowe and Jeavons, has opened new offices at 13210 Shaker Square, Cleveland, Ohio.

Rhenisch, Wilson and Waterman, engineer and architects, have opened offices at 612 North Grove Avenue, Oak Park, Illinois.

Paul J. Saunders announces the opening of offices for the practice of architecture and engineering at 413 Murphy Building, East St. Louis, Illinois.

Theodore L. Soontup, architect, has new offices at 32 Union Square East, New York City.

J. C. Fistere, formerly associate editor of *Architectural Forum*, is now architectural editor of the *Ladies' Home Journal*.

●

Thomas Rose, F.A.I.A., died November 17 at his home in Milwaukee at the age of 67. For 38 years a member of the firm of Kirchhoff and Rose, he was co-designer of many important buildings.

●

Philip Thornton Marye, architect, died in Atlanta, Georgia, December 2, after a long career in the South.

Frank Wells Hall, a sales executive of General Electric Company and well known in Eastern electrical circles, died November 25 in Stamford, Connecticut.

●

House Beautiful announces the following awards in its Eighth Small House Competition, which closed October 15: Class I, first prize, H. Roy Kelley, Los Angeles; second prize, Harrison Gill, New York City. Class II, first prize, Richard Frederick King, Los Angeles; second prize, Robert Charles Dean, Newton, Massachusetts. Evans, Moore and Woodbridge of New York City received the special prize for remodeled houses.

●

Under the direction of Gilbert Rhode, well-known industrial designer, the WPA Federal Art Project opened its New York Design Laboratory in December. This school is designed for students who cannot pay tuition. Many phases of design are offered.

●

The School of Architecture of Washington University, St. Louis, Mo., announces its tenth competition for the Steedman Fellowship. The award is open only to graduates of recognized architectural schools who have had at least one year's office experience and one year's residence in St. Louis. Details are available from the acting head of the School of Architecture, Washington University, St. Louis, Missouri.

●

The Architects' Emergency Committee for New York City requests all draftsmen registered with them to keep them informed of any change of address or telephone number.

NEXT MONTH: This will be a special issue devoted to low-cost private dwellings. The topic has been chosen in recognition of the growing practical interest in it of both architects and manufacturers. Particular attention will be given to plan, construction and equipment of houses costing $2,400 to $4,000 without the lot and $3,000 to $5,000 with the lot.

A CORRECTION: The following letter has been received from W. Pope Barney of Philadelphia—

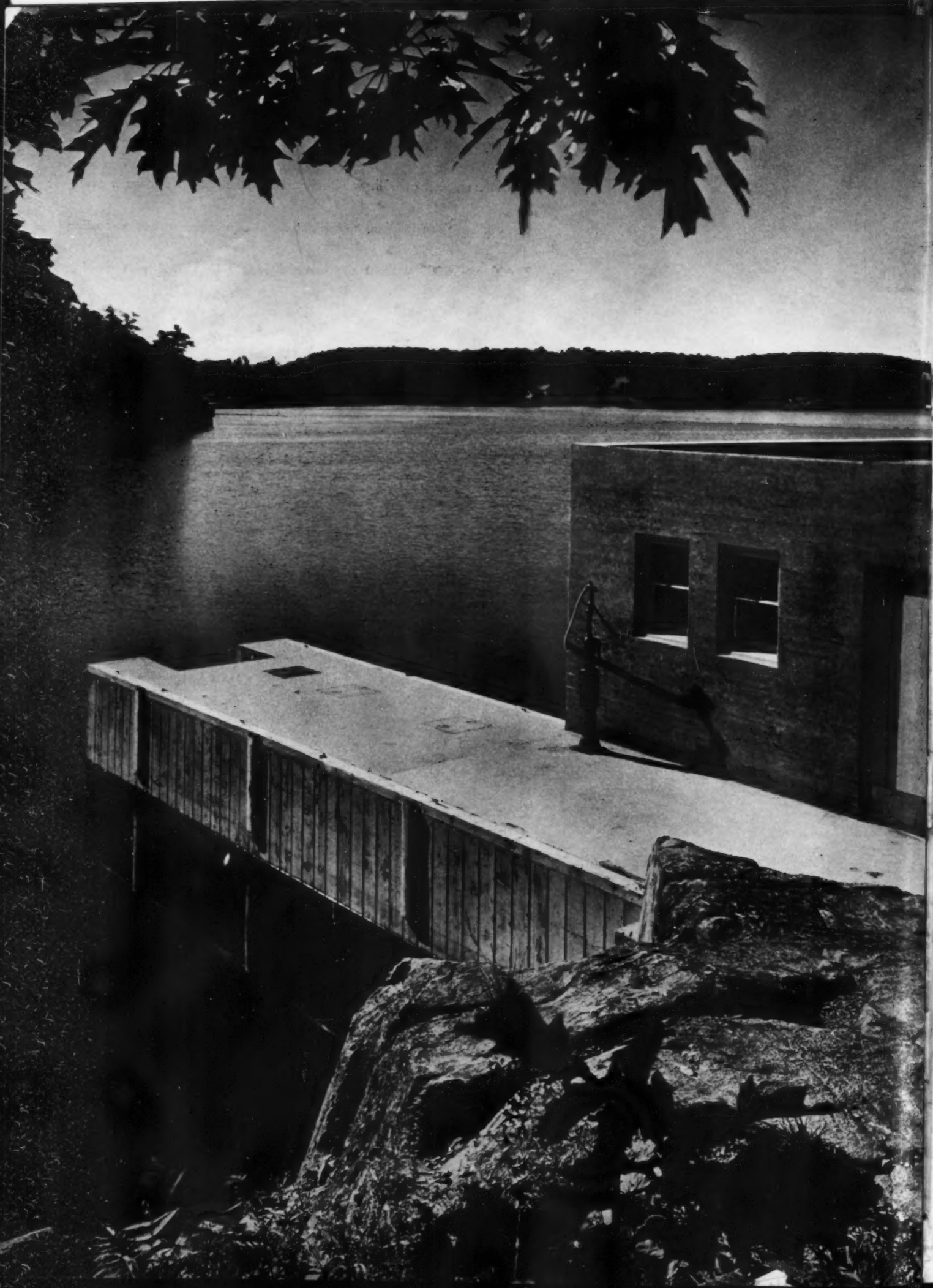
In the November issue of The Record, the Juniata Park Housing Project, Philadelphia, appears over the caption "Executed under the Direction of W. Pope Barney, Architect."

It is regrettable that the registration law of Pennsylvania should make it necessary to omit the names of those who are primarily responsible for the design of the building.

Messrs. Alfred Kastner and Oscar Stonorov conceived the scheme after a considerable period of technical research, took it to Washington, had the preliminary drawings approved and allocation made before I entered the picture.

The working drawings, specifications, and superintendence of the work were carried out under my direction as architect for the project. Messrs. Kastner & Stonorov were not registered architects and could not appear officially.

The omission of their names in connection with the publication was a regrettable surprise to me, and I ask that this letter be published in an early issue in the interests of equity.



VOL. 79 NUMBER 1

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JANUARY

THE

ARCHITECTURAL RECORD

CONCRETE FOR NEW DESIGNS

By ANTONIN RAYMOND, Architect

ARE not lightness and precision among the most sought-for qualities in modern building? The ideal of beauty nowadays undoubtedly is simplicity and the particular elegance obtainable only through these two attributes—lightness and precision.

Concrete as a building material is ideal for precision, for lightness and for economy of space. It is therefore a truly modern material and its use should be more general than it has been so far. It is fireproof, and its mass—the thickness of walls and floors and the sizes of columns and beams—can be calculated to a nicety. It is especially suited to earthquake-proof buildings, for it is very strong under compression, and the rigid method of antiseismic construction is generally accepted as the only practical method.

There are all kinds of concretes at the disposal of the architect: concrete made with standard portland cement, high early-strength concrete, concrete of high compressive strength, aerated concrete, low-strength concrete, and the lava or cinder concrete. Concrete can be precast and used in slabs; it can also be used in blocks.

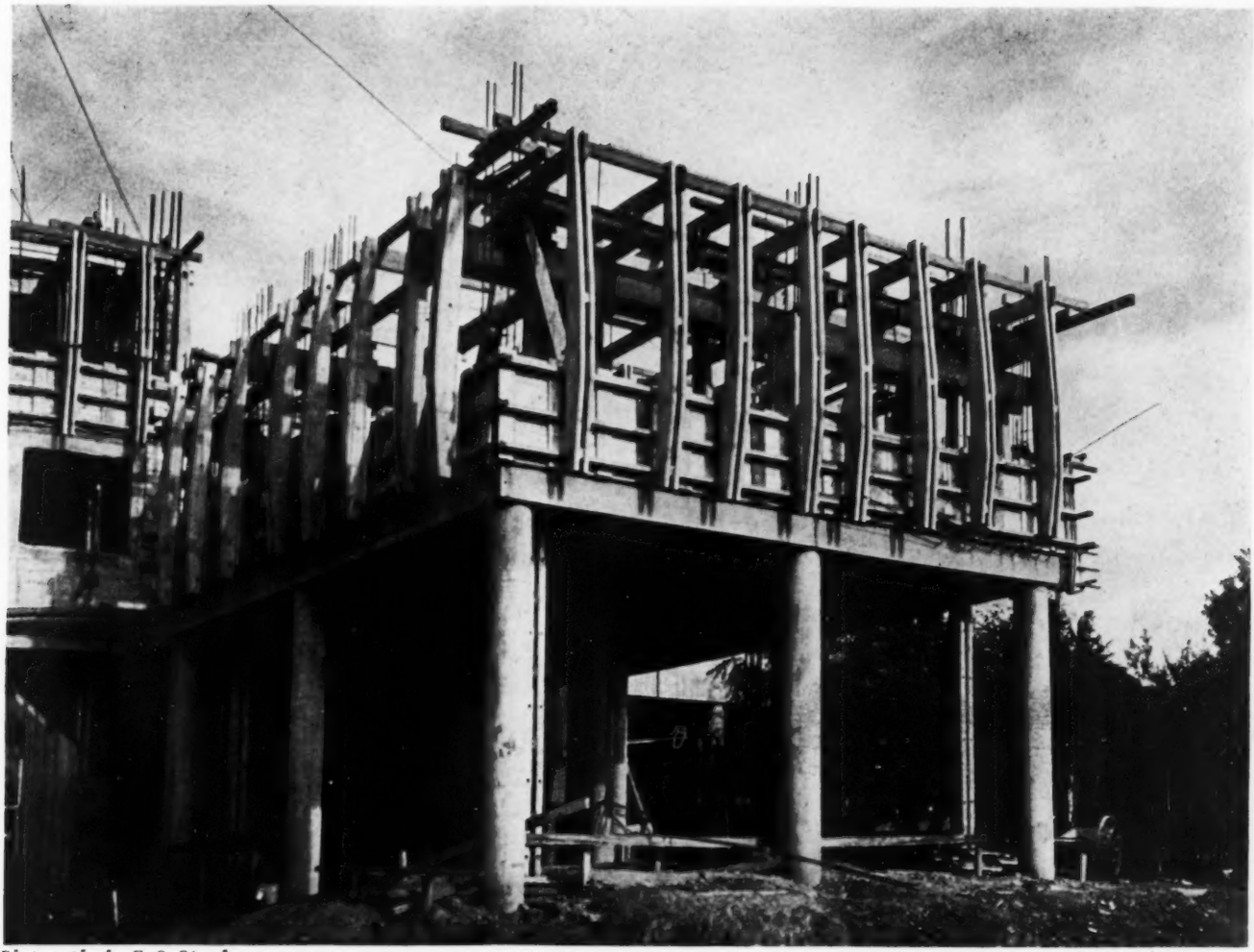
BEFORE designing *reinforced concrete* one should always get samples of the aggregate, the sand, and the cement which will actually be used on the job. Using the water-cement ratio theory, the most economical mix should be designed for the particular use to which the concrete is to be applied. Laboratory tests would determine the exact mixture necessary to obtain a specific compressional strength. At the start of a job the engineer should be consulted as to this desired strength, so that it will at least conform to the local building code and safety regulations.

In my own experience with concrete construction in Japan, I have used concrete made of material found in the excavations where the building was to be erected. It was washed and cleaned of all but the mineral matter, test blocks and cylinders were made and from the results the thickness of the walls and the sizes of the columns were obtained. An example of this method of construction is the church in Karuizawa, Japan, photographs of which appear on pages 29-36 of this issue.

High-strength concrete will permit small sec-

CONCRETE HOUSES UNDER CONSTRUCTION AT GENESTA ROAD, PLUMSTEAD, ENGLAND

The concrete walls are fabricated by means of wood forms which extend a full story in height and can be used repetitively for successive pourings of concrete as the building goes up from the foundations.



Photographs by F. S. Lincoln

PILICHOWSKI AND LUBETKIN
ARCHITECTS

The house construction is ferro-concrete cast in place. Columns were formed by asbestos pipes. Exterior walls are 4 inches thick with 1 inch of bituminous cork insulation, and finished with a light buff waterproof concrete paint.

tions to be designed for every part of the building, thus saving weight and reducing the cost of construction.

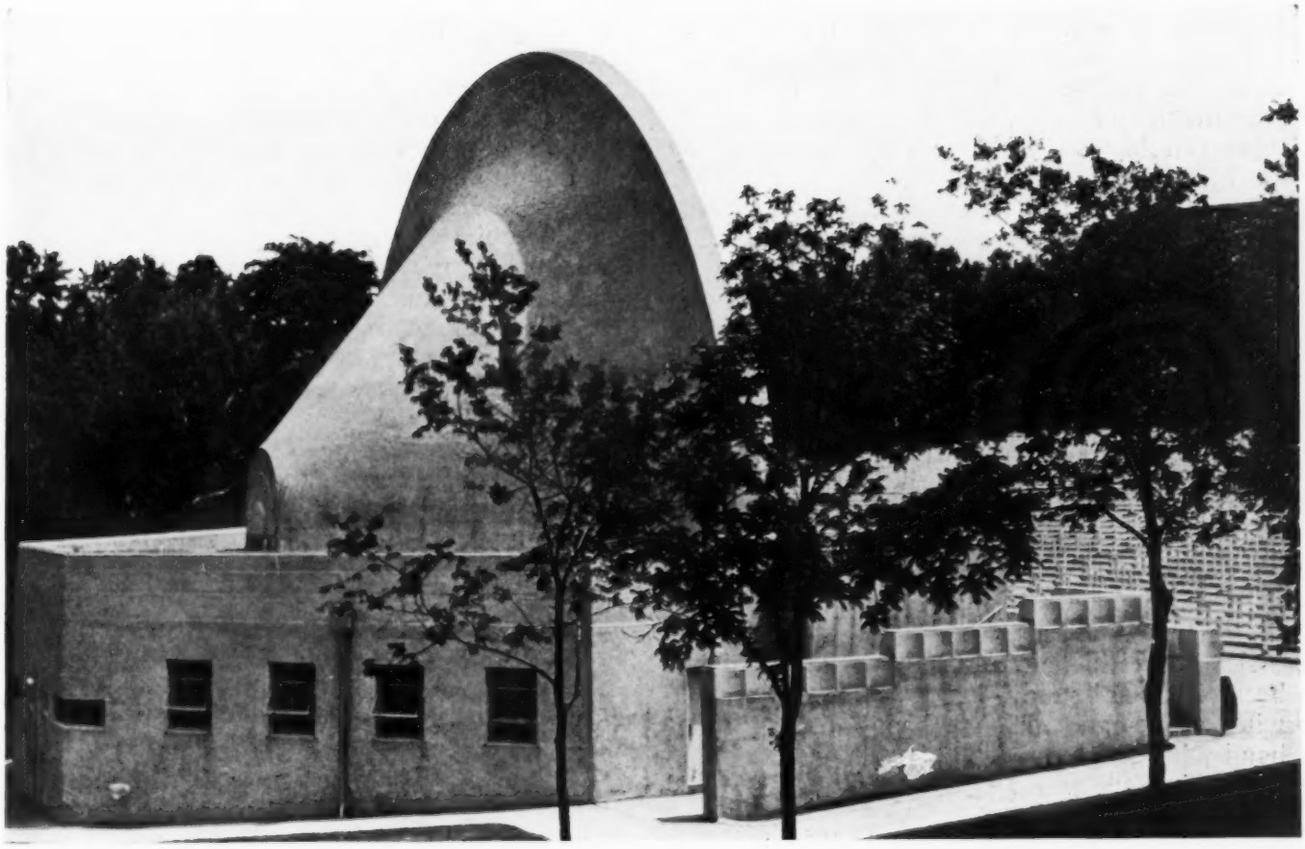
By using *high early-strength concrete,* construction can proceed even in winter. Certain construction features requiring quick time in execution are likewise made possible.

Aerated concrete is a good sound and heat insulator, and because of its light weight, it is a good material for use in grading or for grooves in floors.

Low-strength concrete can be used to good advantage in leveling and hardening ground under foundations.

A COUNTRY HOUSE OF CONCRETE IN JAPAN
ANTONIN RAYMOND, ARCHITECT

Formwork has just been removed, showing the monolithic construction. Roofs, columns and walls, window overhangs and floors, all are cast together without joints. Floor bolts, downspouts, piping and ducts are set in the forms before the concrete is poured.



MUSIC PAVILION AT SIOUX CITY, IOWA
HENRY L. KAMPHOEFNER, ARCHITECT
PAUL COOK & BRUCE PACKARD
ENGINEERS

The truncated-cone shape of this concrete-cast music pavilion was determined by acoustical requirements in reflecting sounds to listeners seated in the natural amphitheater. About 60% of the weight of the great arch was eliminated by hollow construction.

Where natural lava is obtainable, *lava concrete* may take the place of aerated concrete.

Cinder and slag concrete also have various uses because of their lightness.

Different cements, as well as different aggregates, will impart different colors to the concrete. In using concrete an architect soon becomes aware of this and will take full advantage of this quality.

CONCRETE is a plastic and readily adaptable material. It is not particularly difficult for concrete to simulate other products. The general practice in the United States has been to use concrete in this manner—either covered over by other materials, like brick and tile and stucco, or tooled or precast to imitate antique forms pleasing the fancy of the owner or the taste of the architect.

The truly modern use of this material points in another direction. There is inherent beauty in concrete and it has its own character if studied and understood. There are structures where hard-polished surfaces with sharp corners and exact levels are desirable; there are others where the unevenness and the texture of the wood forms (and the occasional impressions of the knots in the wood) are suitable. Both can be easily obtained. The first, by the use of dressed

lumber or form liners; polishing with carborundum has also been done. The second, by the use of unplaned material, followed by cleaning with wire brush and water. With practice many textures can be obtained, both by hand and by machine.

Undoubtedly, a concrete finish is more durable and more handsome than almost any applied finish.

Concrete is readily painted, either by flat colors (what the manufacturers call "cement paint") or by any colors in oil or turpentine. The alkali in concrete will turn the colors to a certain degree, often softening any hardness and monotony. Oil color in turpentine will stain concrete and I usually apply it by air brush, producing rather soft effects. (Instead of oil paint alone being used, the oil is diluted with turpentine and sprayed on by air brush, so that the natural surface is not destroyed but stained similarly to wood.)

An interesting effect on an uneven wall has been obtained by chipping the surface like stone with a pea-hammer and then polishing it by hand with carborundum.

GOOD design leads one to research in the minimum of material for given uses. So with concrete. Columns and beams should be just large enough to do the work safely, and no more; likewise with all other sections and walls.

Concrete is particularly applicable for long spans and cantilevers and domes. It can be molded into any shape, therefore curved walls or beams are quite feasible and a continuous research in this direction should lead to new and unexpected forms very different from anything done in past ages but doubtless equally effective. These forms may be even more beautiful because of the scientific exactitude of the ways and means by which they will be attained.

In concrete a flat roof acquires real significance. In concrete the window overhangs can be executed in a permanent fashion. In concrete wide sills are made possible. By cantilevering the floors beyond the columns, continuous windows become feasible, and it is only concrete which made it possible for me to make whole walls disappear. A good example of this is the dining room in the Akaboshi House (see pages 9-28).

The spiral stairs and other staircases in my house designs could not have been executed in any material but concrete. I use concrete even for fireplaces and for built-in furniture, either in natural finish, or polished, or painted, or lacquered.

Any concrete used for roofs or exterior walls or basement walls and floors should be waterproofed. The best method I have found to be integral waterproofing mixed either at the factory or at the site with the material. Waterproofing applied as a surface application is effective only for a short time; it is not permanent. I have obtained a concrete so dense that the roofs did not show any signs of leakage even without the membrane waterproofing which is always used on top of the flat concrete for absolute insurance against possible cracks.

All concrete buildings require furring of exterior walls for insulation and acoustical reasons, and so do all floors and walls where soundproof or heat-insulating qualities are required.

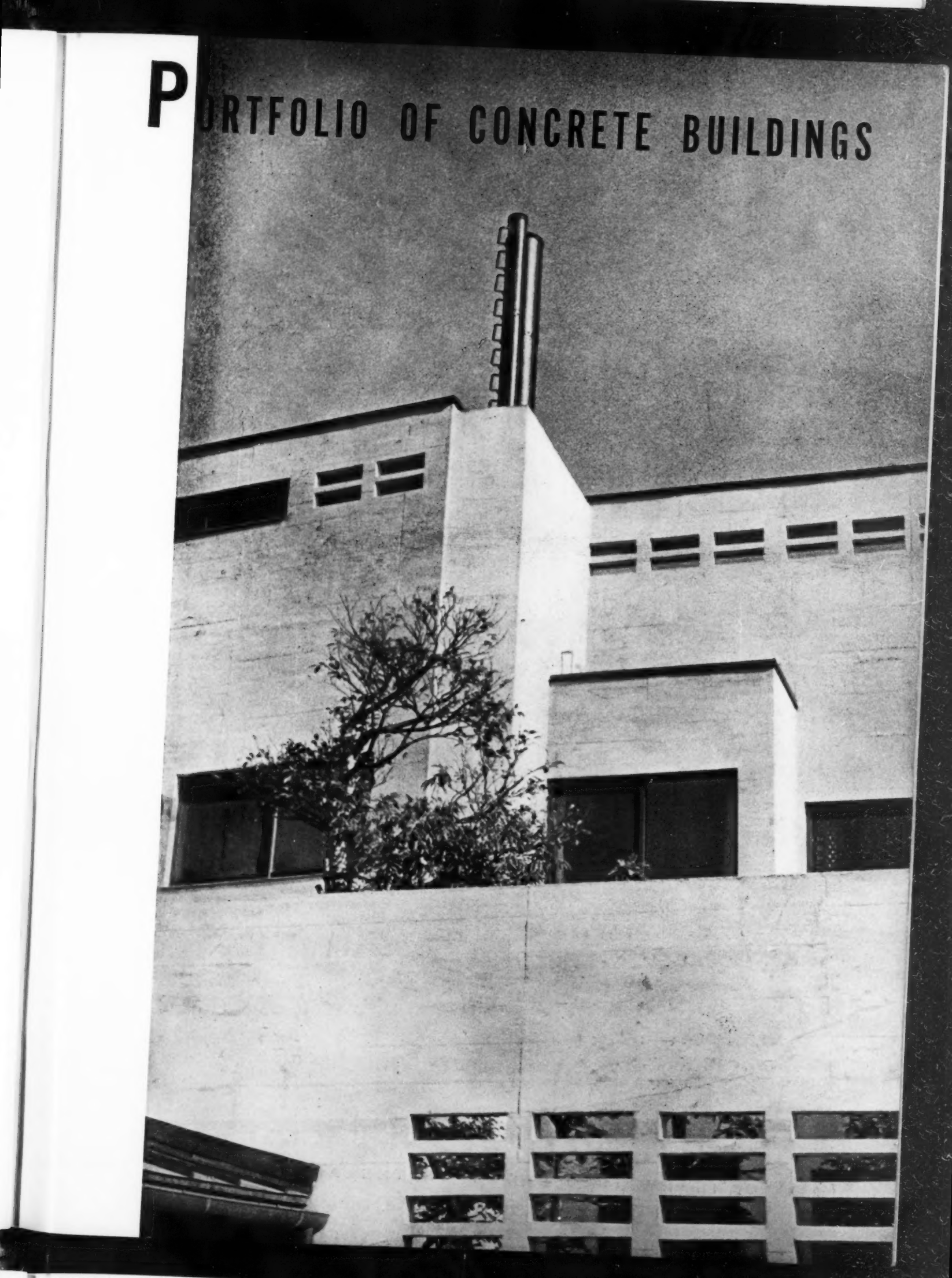
Should I practice architecture in the United States in places where there is no danger from earthquakes, I would not advocate monolithic concrete construction. The proper use of concrete for building in this country is in the structural framework, floors and roofs, but *not* in the curtain walls which should be of a lighter and more effective insulating material. This would lead to interesting designs involving the combining of materials.

The most effective earthquake-proof design for brick buildings or for high buildings undoubtedly is steel frame covered with reinforced concrete, both the steel frame section and the reinforcing bars being taken into account in calculating all the necessary structural members. This is a common practice in Japan.*

**Editor's note*—Asked to comment on the effectiveness of such structural design for American practice, the Portland Cement Association has this to say:

"California earthquake experiences refute the thought in this paragraph. Practically all of the main buildings in California which are designed for resistance to earthquake shock use concrete walls for distribution of shear, and in a majority of the cases it will be found that the frame of the building is also reinforced concrete, with concrete floor systems for distribution of the shear to the walls. Their performance to date would indicate that this is the most satisfactory type of construction."

PORTFOLIO OF CONCRETE BUILDINGS



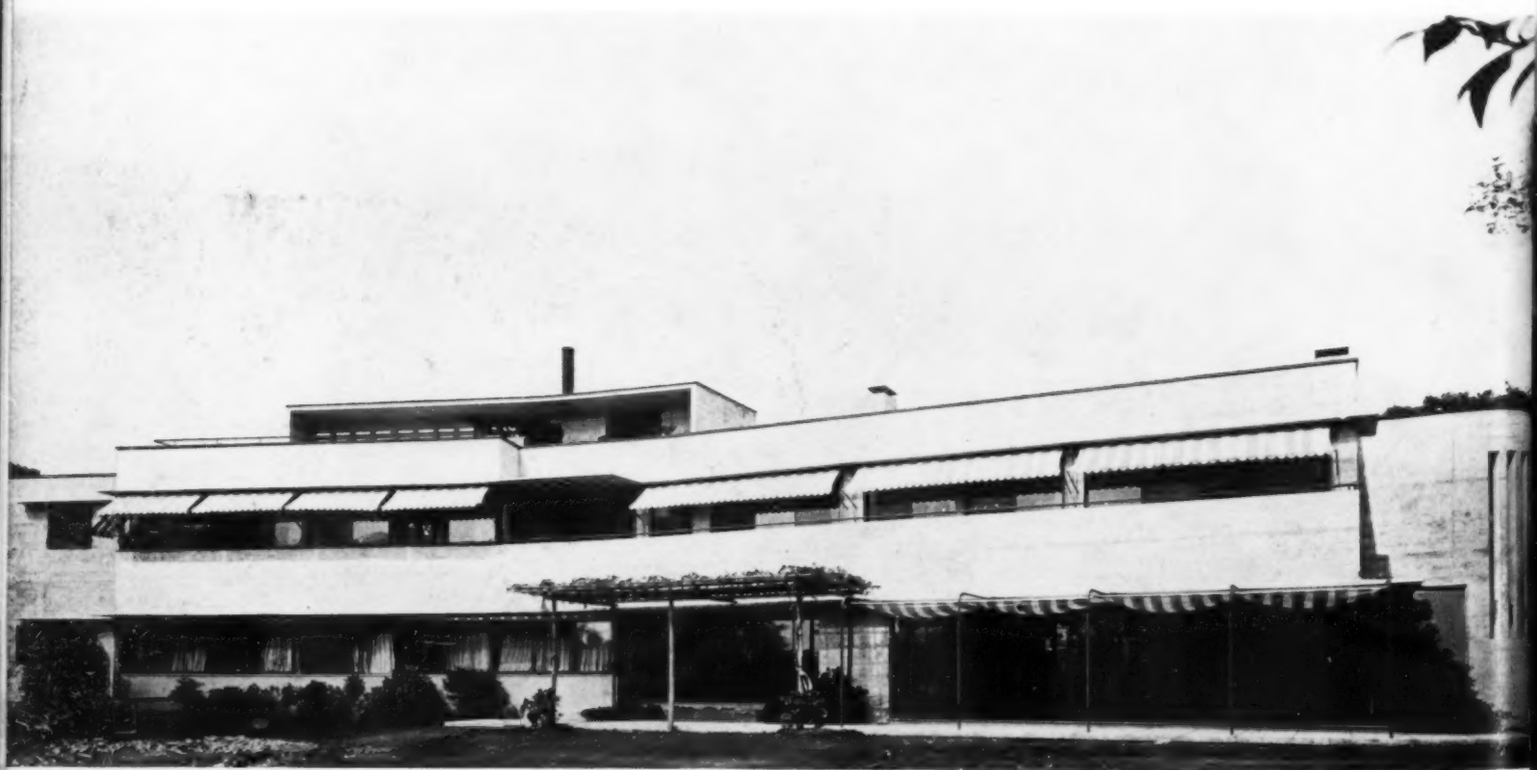
RESIDENCE OF TETSUMA AKABOSHI

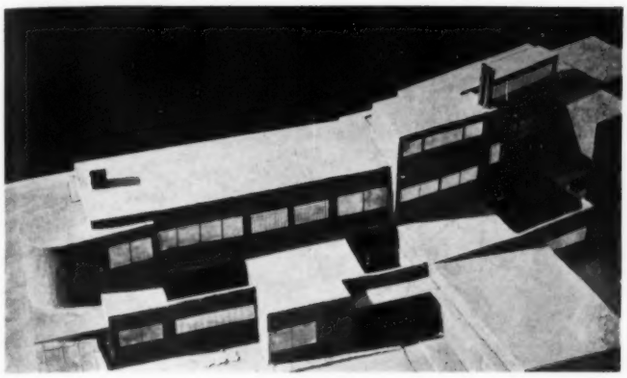
KICHIJOJI, JAPAN

ANTONIN RAYMOND, ARCHITECT

1 VESTIBULE
2 HALL
3 LIVING RM.
4 DINING RM.
5 JAPANESE RM.
6 MADAM'S' BED RM.
7 CHILDREN'S RM.
8 KURA
9 NANDO
10 DRESSING
11 JAPANESE BATH RM.
12 FAMILY ENT.
13 RECEPTION
14 INTENDANTS
15 PANTRY
16 KITCHEN
17 SERVANT'S RM.
18 LAUNDRY
19 SERVICE ENT
20 PATIO
21 TERRACE

South Façade



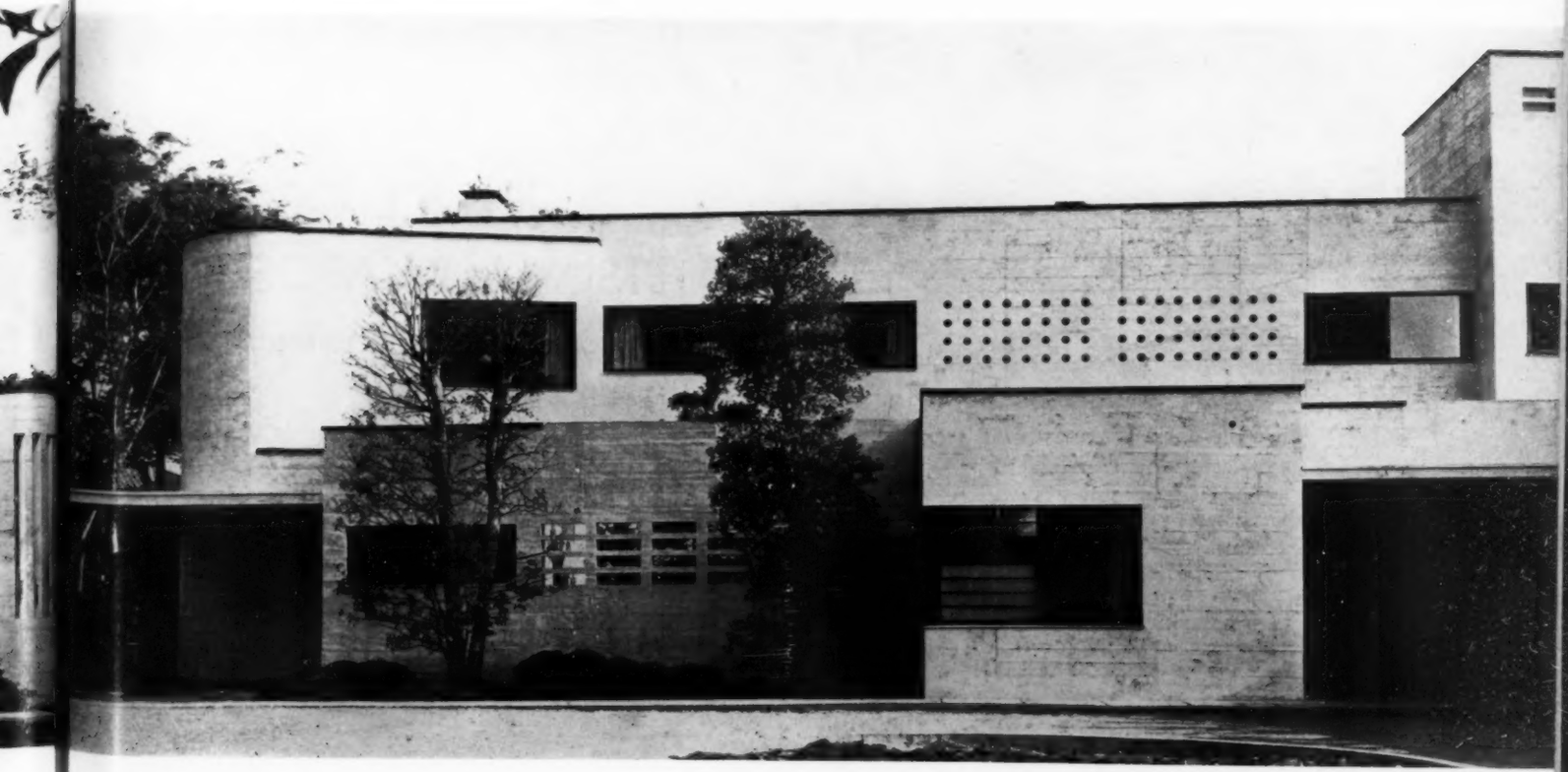


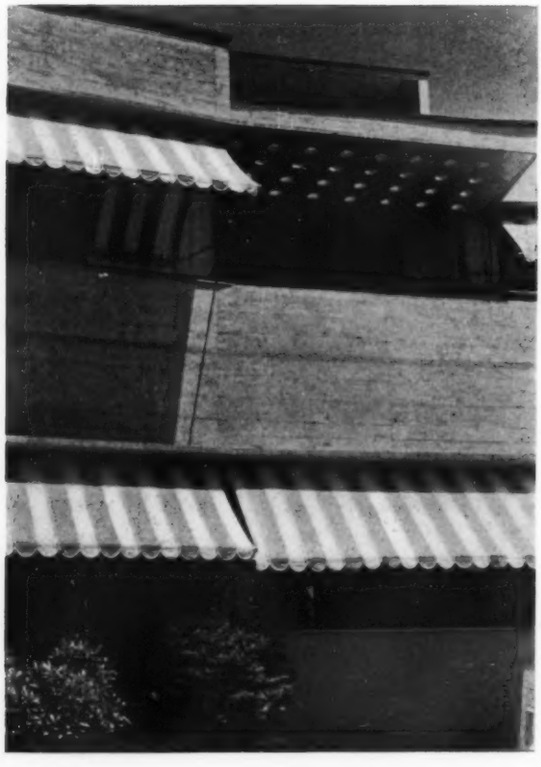
This model shows how the interior gardens provide natural ventilation. High walls give protection against intruders and permit rooms to open into the gardens on hot summer nights.

1 JAPANESE RM
2 STUDY
3 MASTER'S BED RM
4 DRESSING RM
5 HALL
6 PANTRY
7 CHILDREN'S RM
8 NANDO
9 SHRINE
10 BATH RM
11 KURA
12 BALCONY

SECOND FLOOR PLAN

North Façade

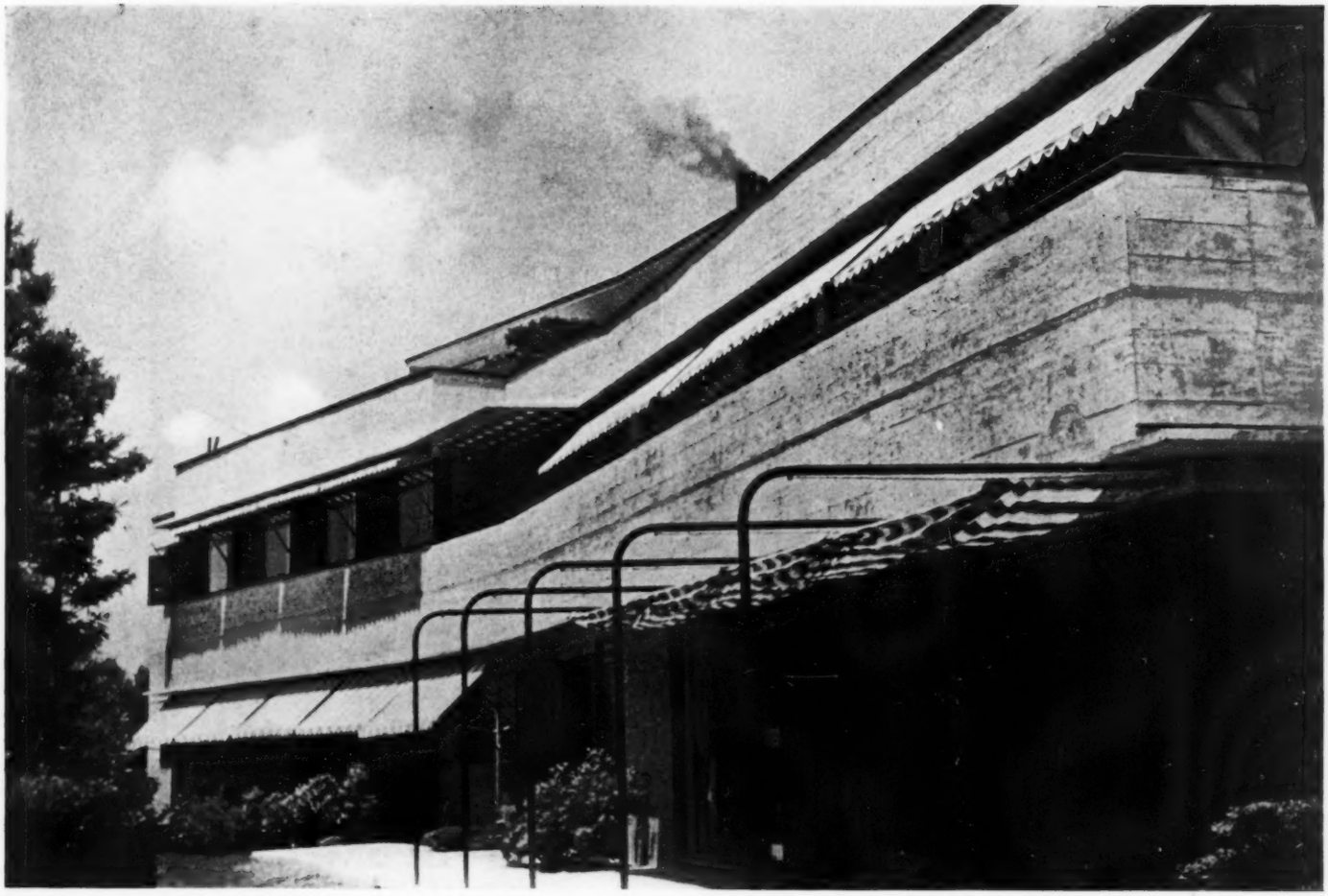




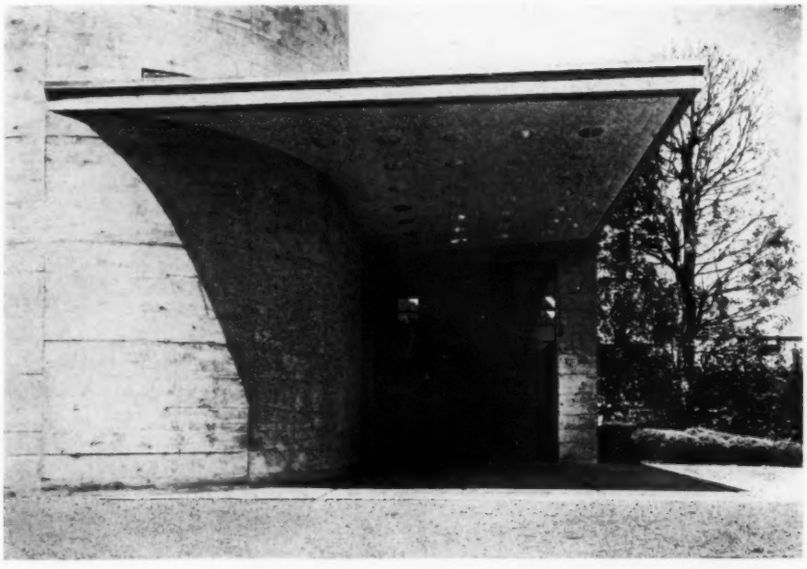
RESIDENCE OF TETSUMA AKABOSHI

ANTONIN RAYMOND, ARCHITECT

Bright awnings and copper copings add to the colorfulness of this house. The concrete façades are a warm gray, with the overhangs painted on undersurfaces—yellow on the first story and light blue on the second. Walls behind shrubbery are a light green and the window sash red.



A detail view showing the sliding glass walls of the living room and the exterior frame on which the awnings can be drawn to provide shade.

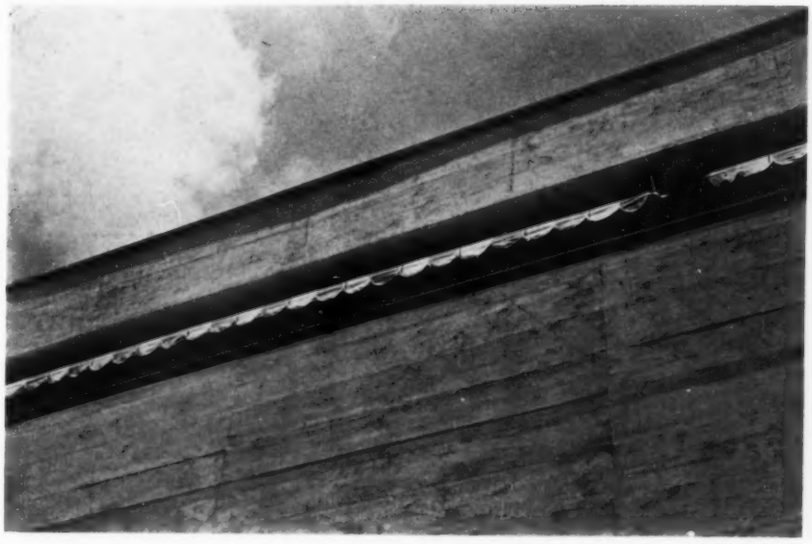


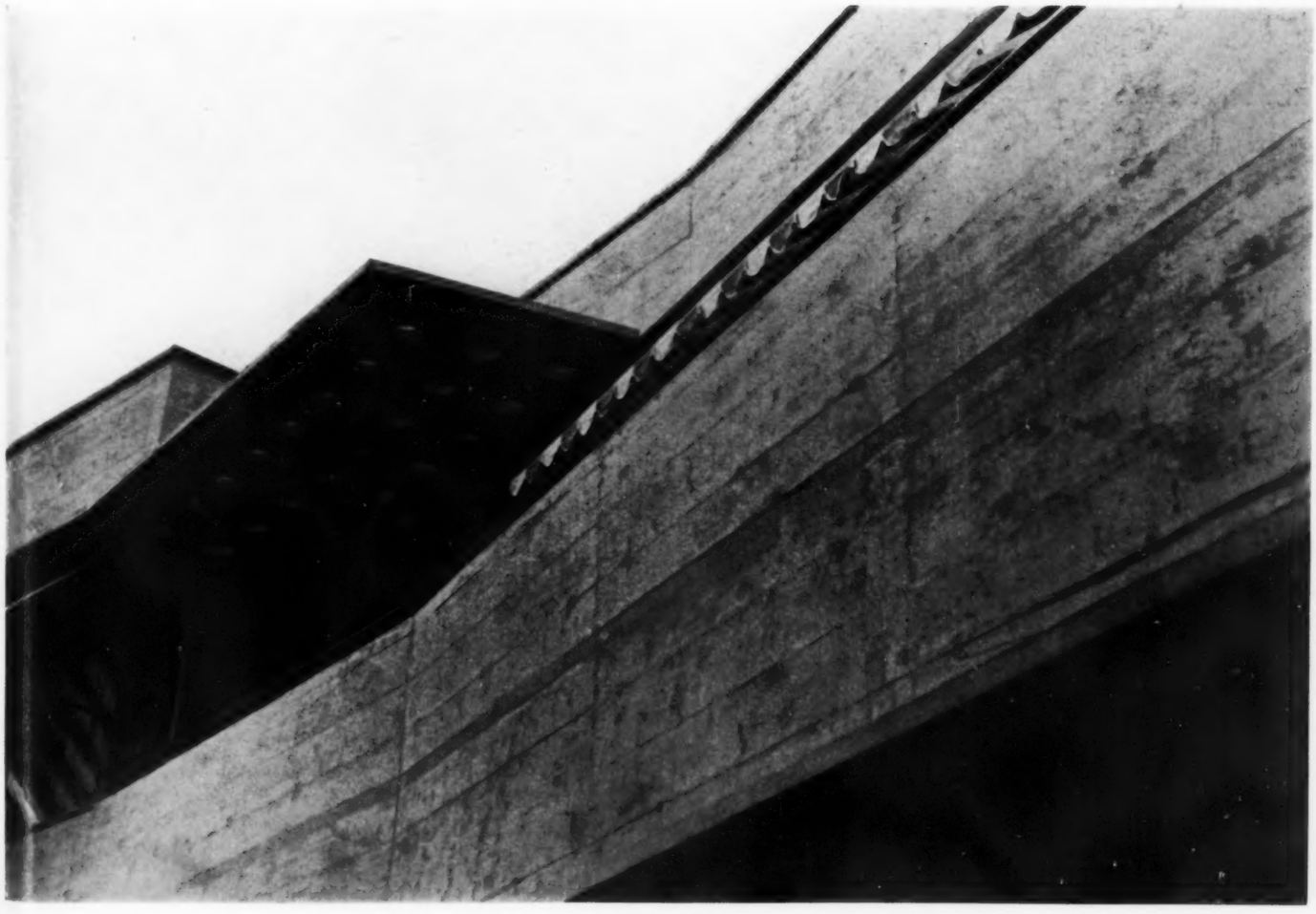
This concrete porte-cochère at the main entrance is cantilevered from two sides, meeting diagonally and resulting in a light construction. The under side is painted a light yellow.

RESIDENCE OF TETSUMA AKABOSHI

ANTONIN RAYMOND, ARCHITECT

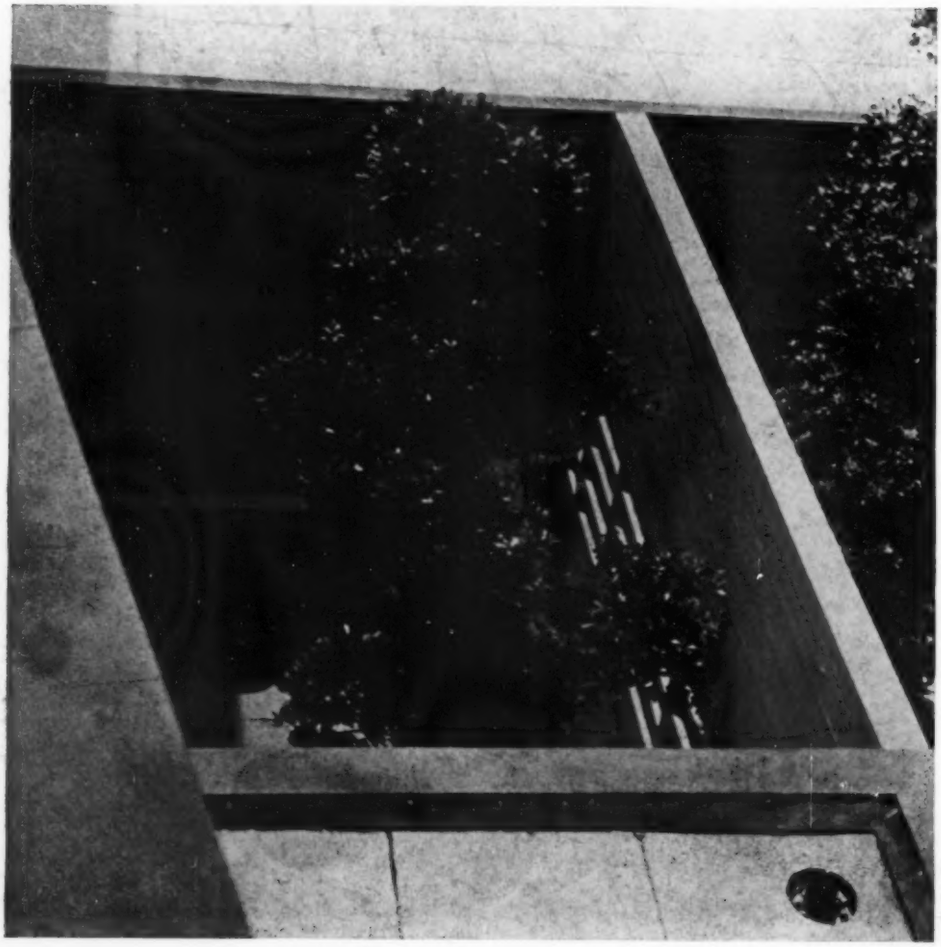
On opposite page: View looking down from roof garden. . . . **On this page:** Detail photographs showing the concrete texture. Glass is used in the overhangs to emphasize lightness.



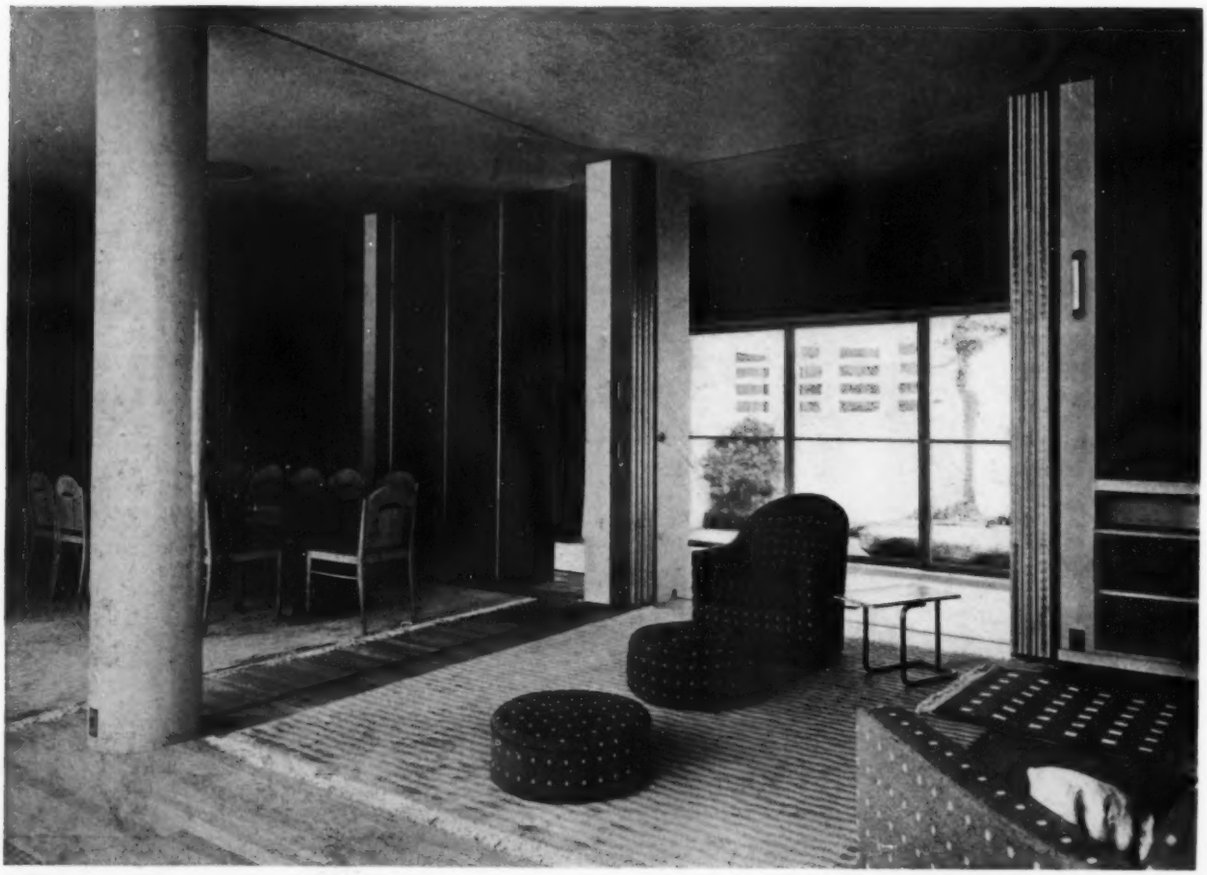


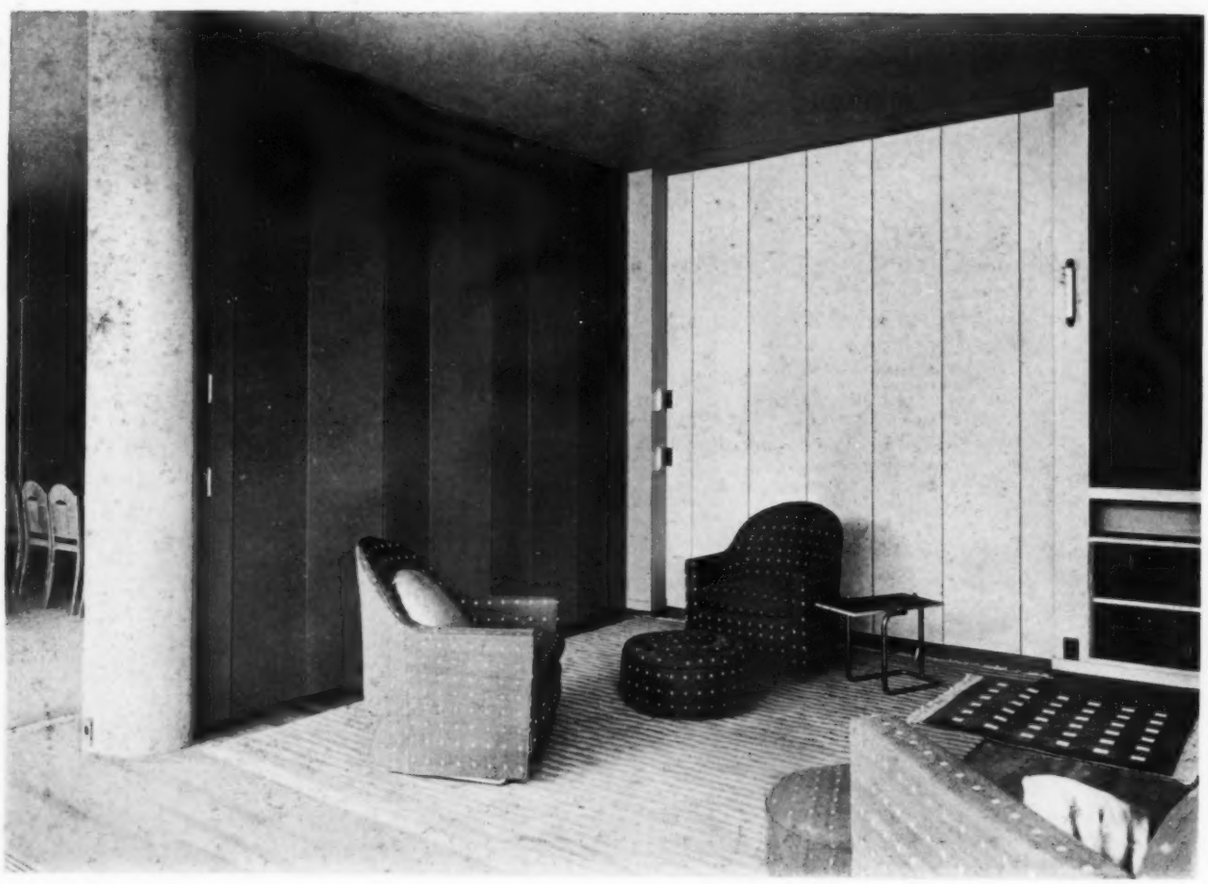
RESIDENCE OF TETSUMA AKABOSHI

ANTONIN RAYMOND, ARCHITECT



The walls of the interior gardens are tinted with oil paint as a background for the carefully composed planting. The natural earth is partly covered with moss and stepping stones or split stone paving.

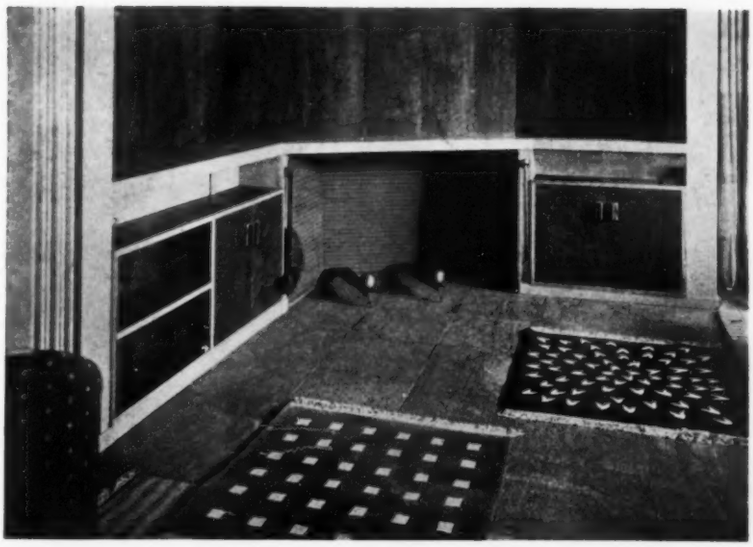


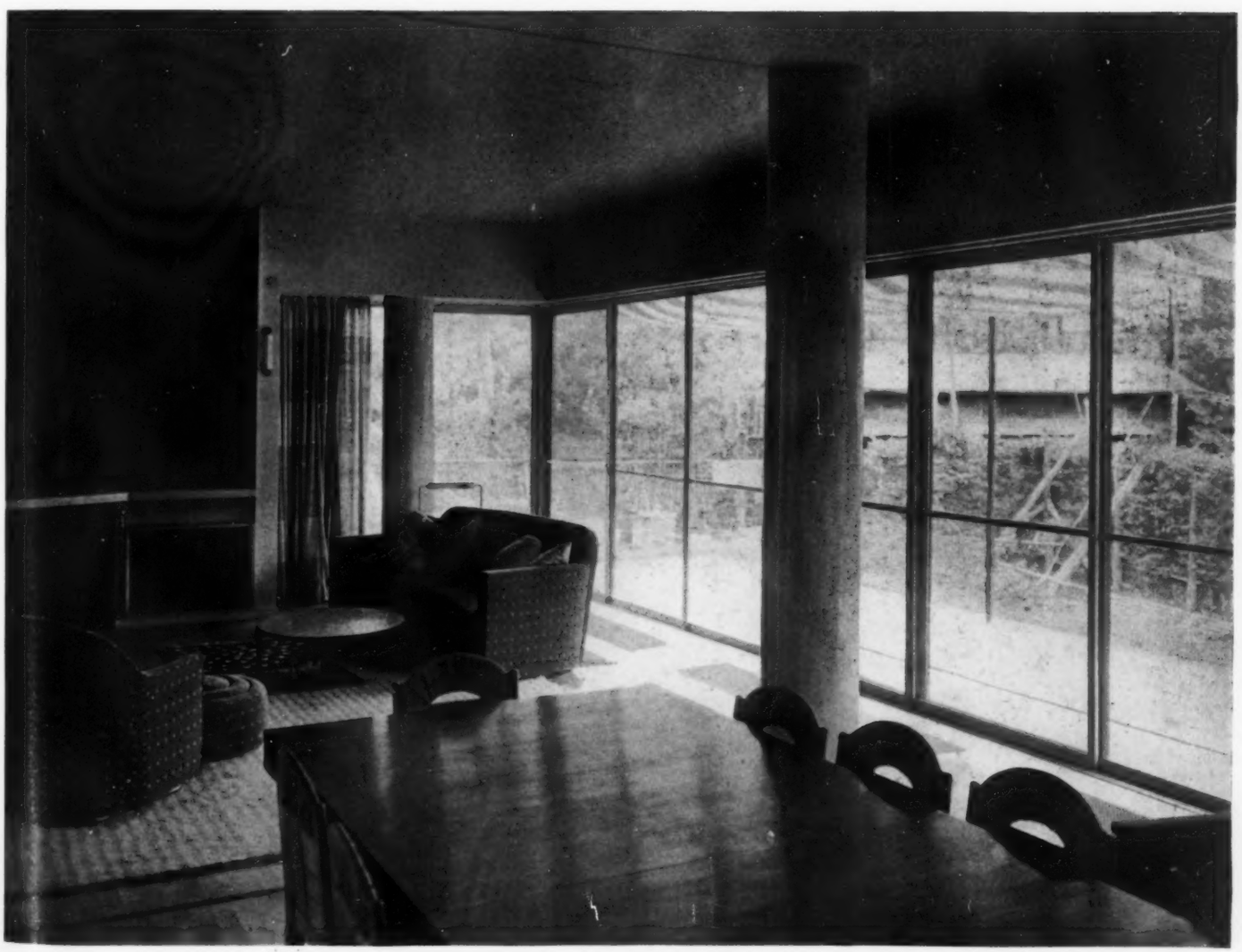


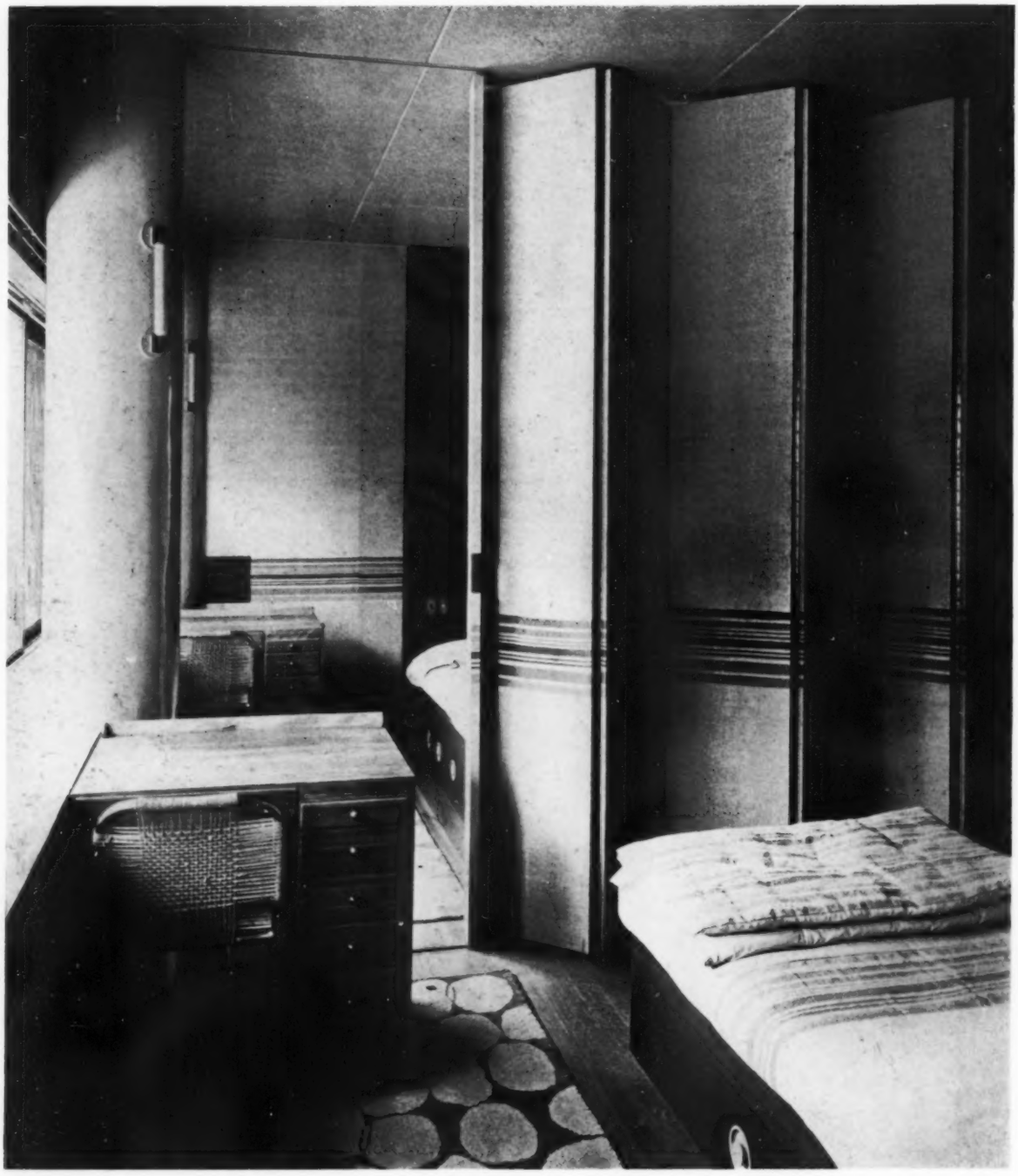
RESIDENCE OF TETSUMA AKABOSHI

ANTONIN RAYMOND, ARCHITECT

On opposite page: Folding partitions, shown open and closed, separate or make into one general space the hall and the living and dining rooms, as desired. The partitions are made of light wood frames covered with cloth of two colors; they are arranged with piano hinges and ball-bearing hangers. **On this page:** The living room fireplace has a concrete shelf, lacquered on top, a cast-iron hearth back and split stone paving. Panels are redwood veneer, and the walls plaster, finished with a flat oil paint. The concrete columns are lacquered.

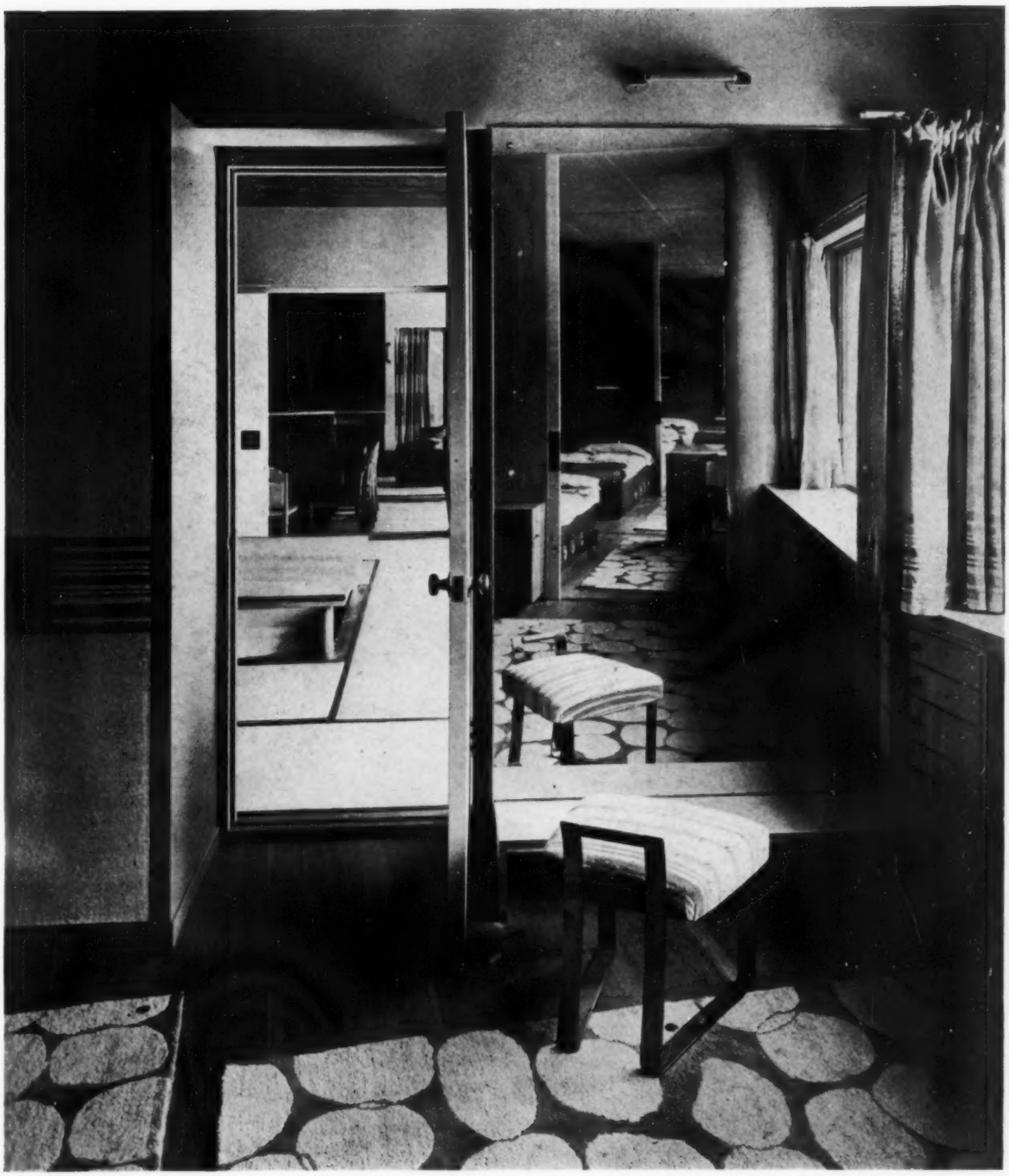






RESIDENCE OF TETSUMA AKABOSHI

KICHIJOJI, JAPAN — ANTONIN RAYMOND, ARCHITECT

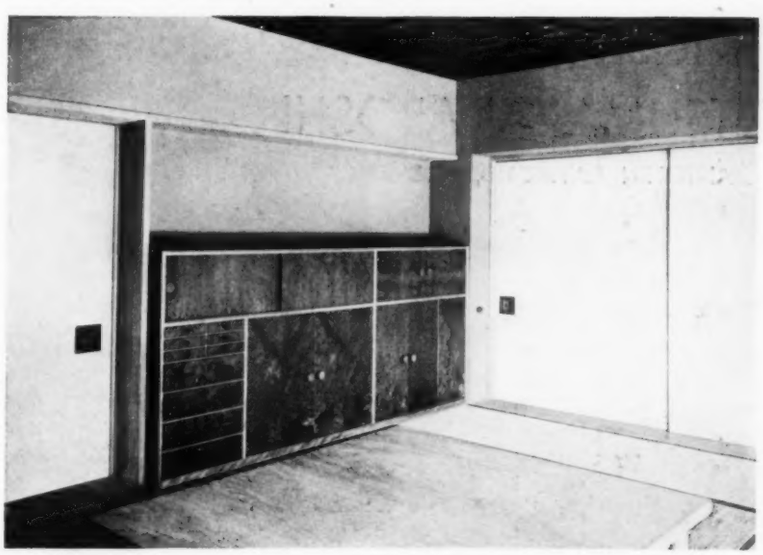


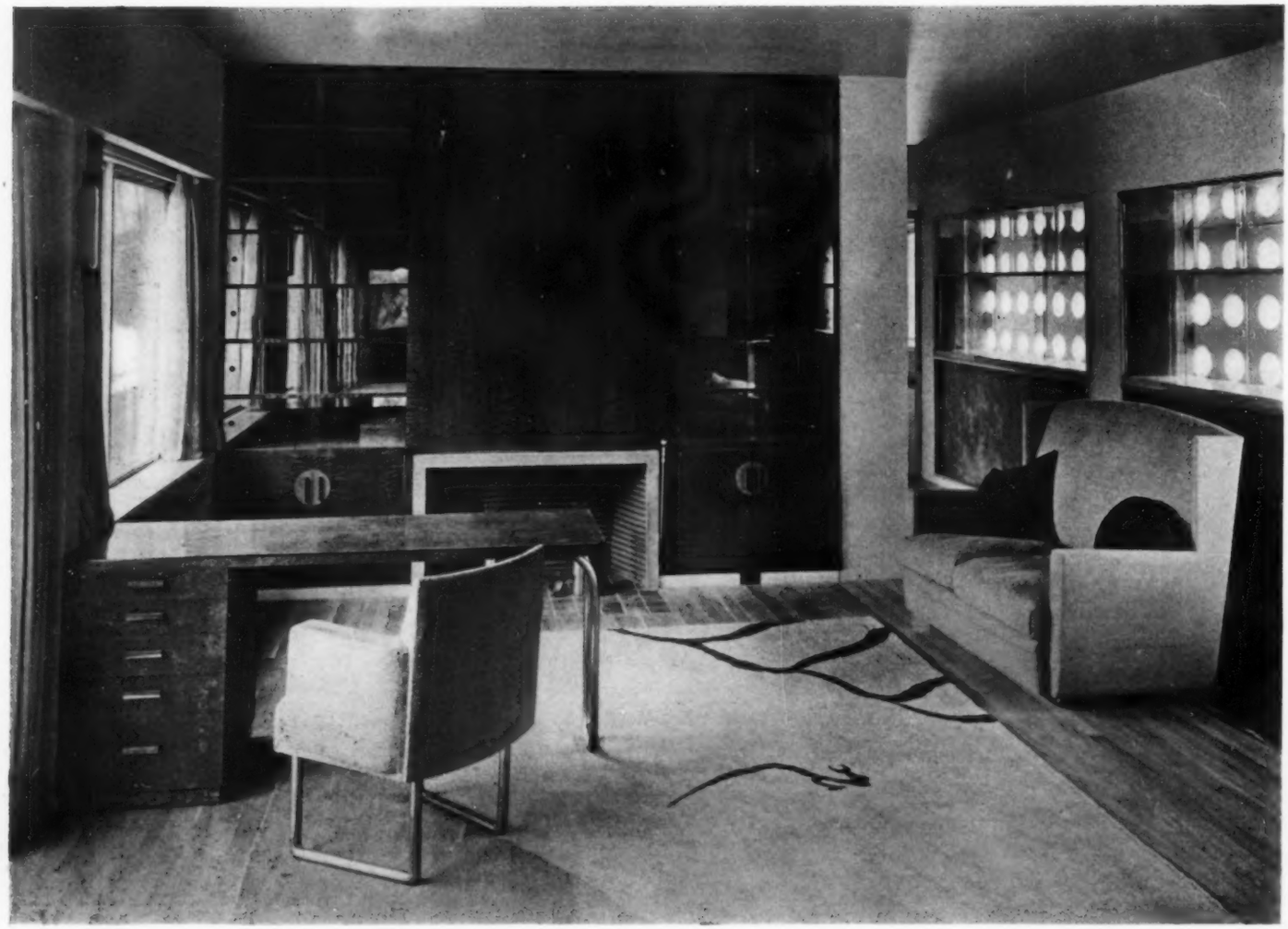
On opposite page: Movable partitions of coarse linen also separate the children's rooms. . . . **On this page:** By an ingenious arrangement of rooms and mirrors, a view of the entire length of the house is had from the centrally-located Madam's room.

RESIDENCE OF TETSUMA AKABOSHI

ANTONIN RAYMOND, ARCHITECT

On opposite page: The concrete stairs have risers of artificial stone, rubber nosings and treads, and steel railings. . . . **On this page:** Above, a view of a second floor room shows how heating is supplied through chrome steel grilles set in the hardwood floor. To the right, the Japanese dining room, with redwood veneer ceiling and built-in sideboard, painted muslin walls, sliding doors of coarse linen, and straw floor mats with linen borders.

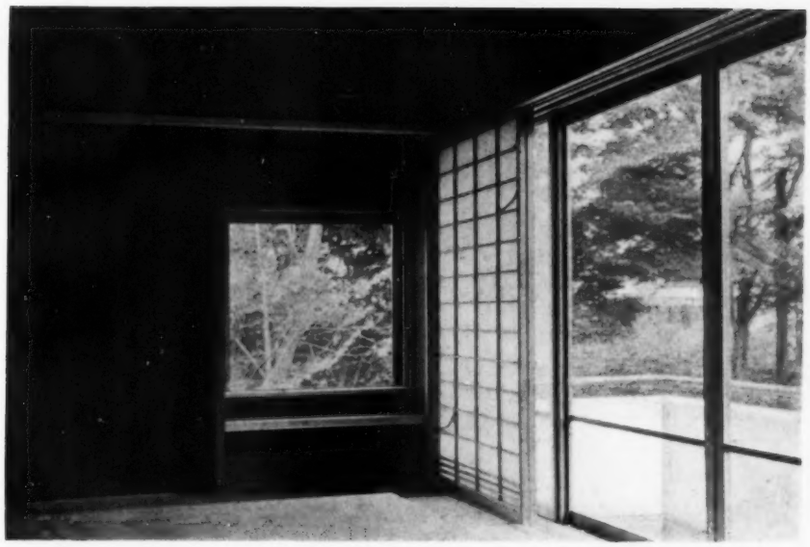


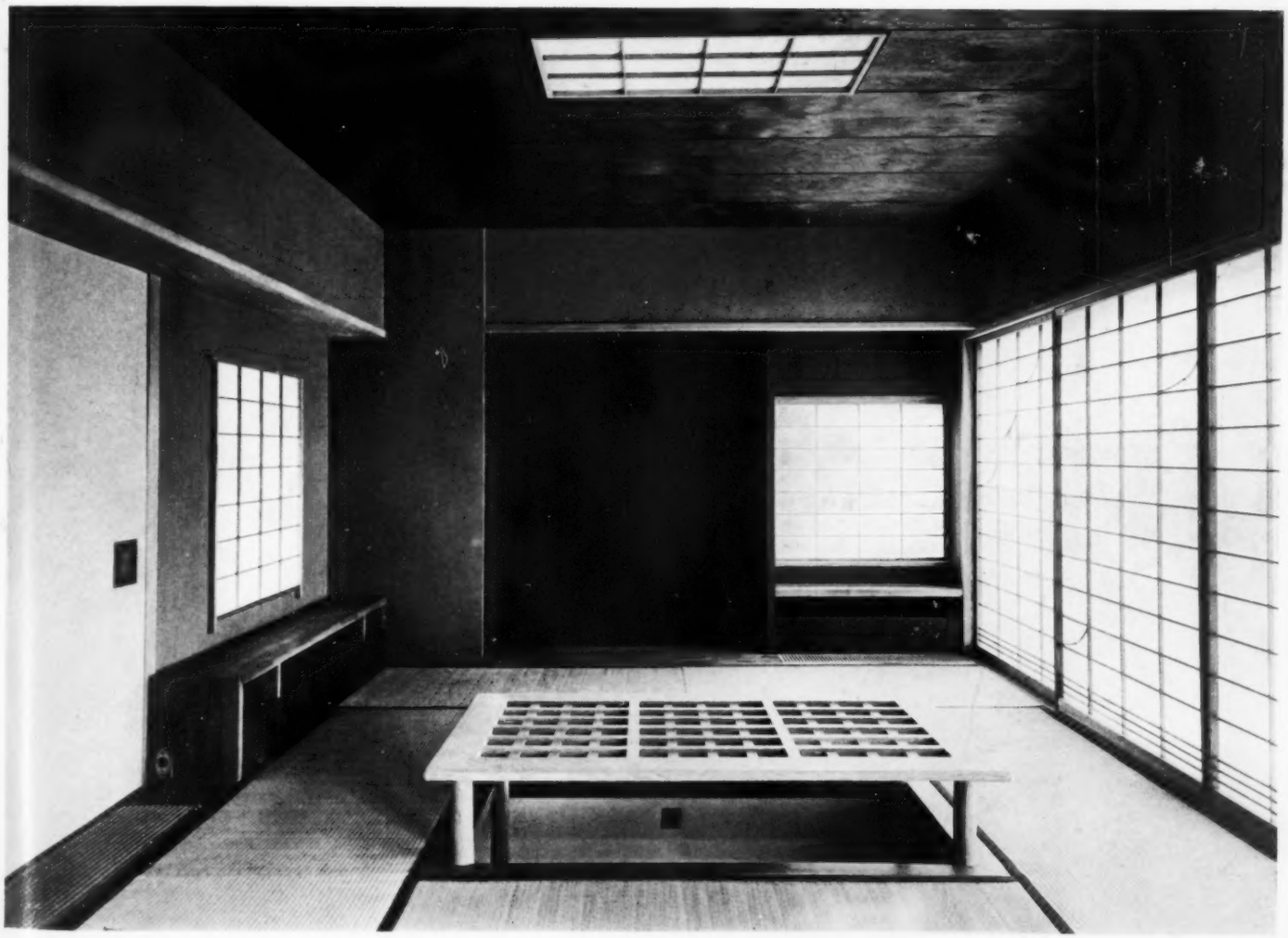


RESIDENCE OF TETSUMA AKABOSHI

ANTONIN RAYMOND, ARCHITECT

On this page: The study. In the corridor at the right are glass cases, illuminated by small openings of molded glass, where rare fish—a hobby—are displayed. . . . **On the opposite page:** A Japanese room, also on the second floor.



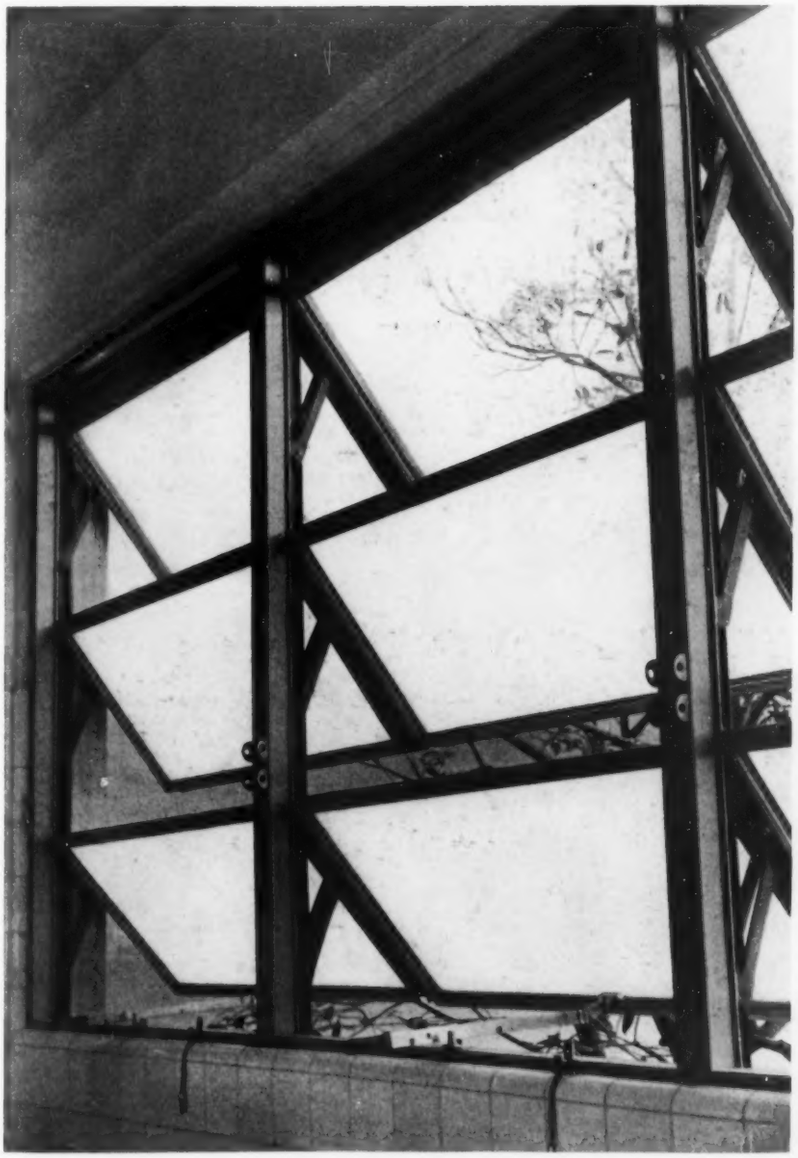


RESIDENCE OF TETSUMA AKABOSHI

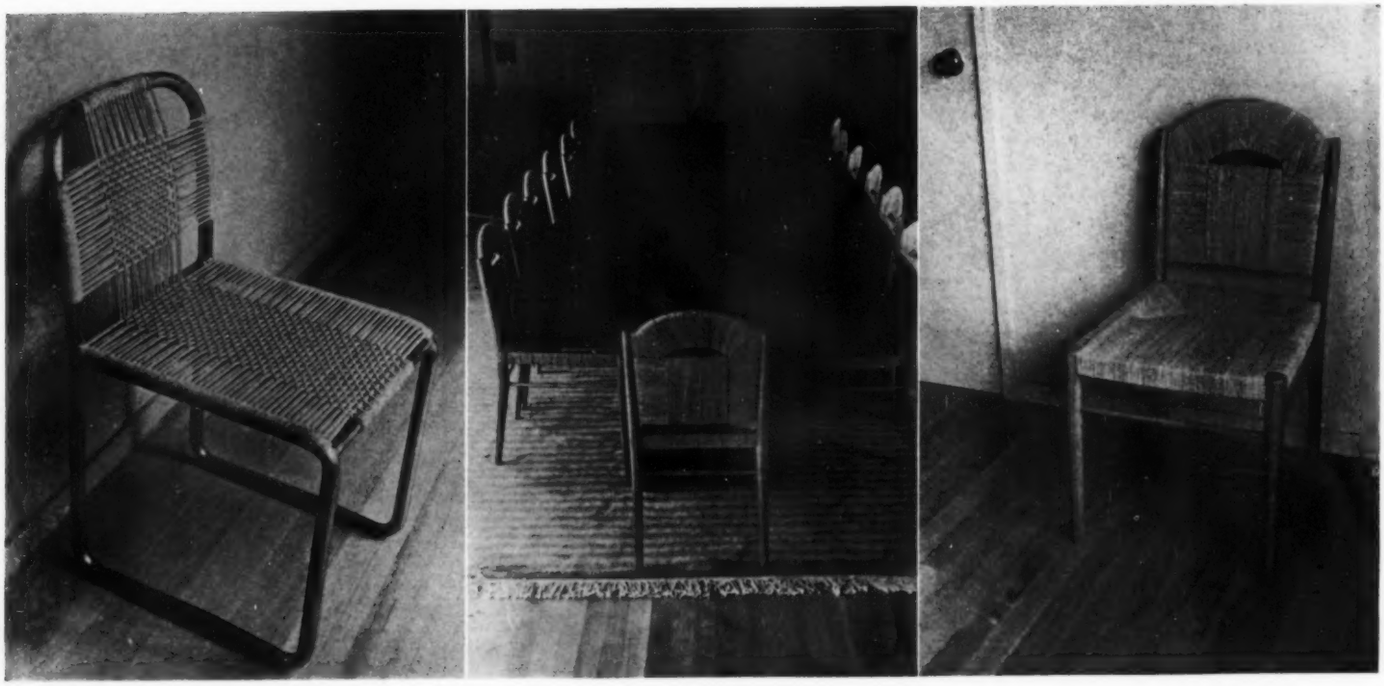
ANTONIN RAYMOND, ARCHITECT

The south wall of the Japanese dining room consists of sliding steel sash which fold and turn at the sides like casements, giving an entirely unobstructed opening. For details of a somewhat similar window construction, see page 53.

This bathroom ceiling is natural wood so arranged that condensation drips from the middle boards to the tops of the adjoining boards and thence to copper gutters along the wall.

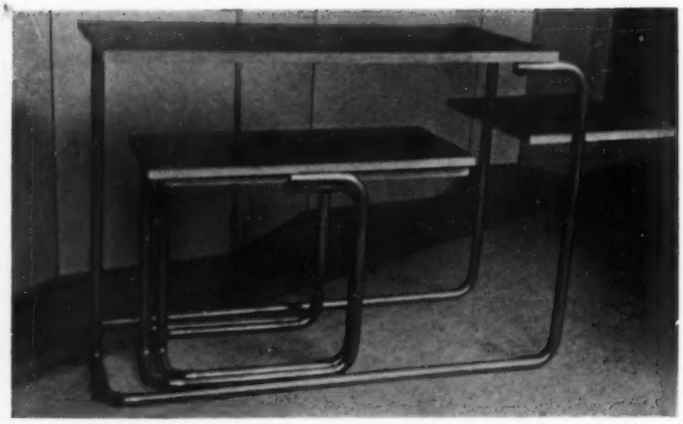


The kitchen is ventilated with window sash operated by levers. For working drawings of this kitchen, see page 52.



RESIDENCE OF TETSUMA AKABOSHI

ANTONIN RAYMOND, ARCHITECT



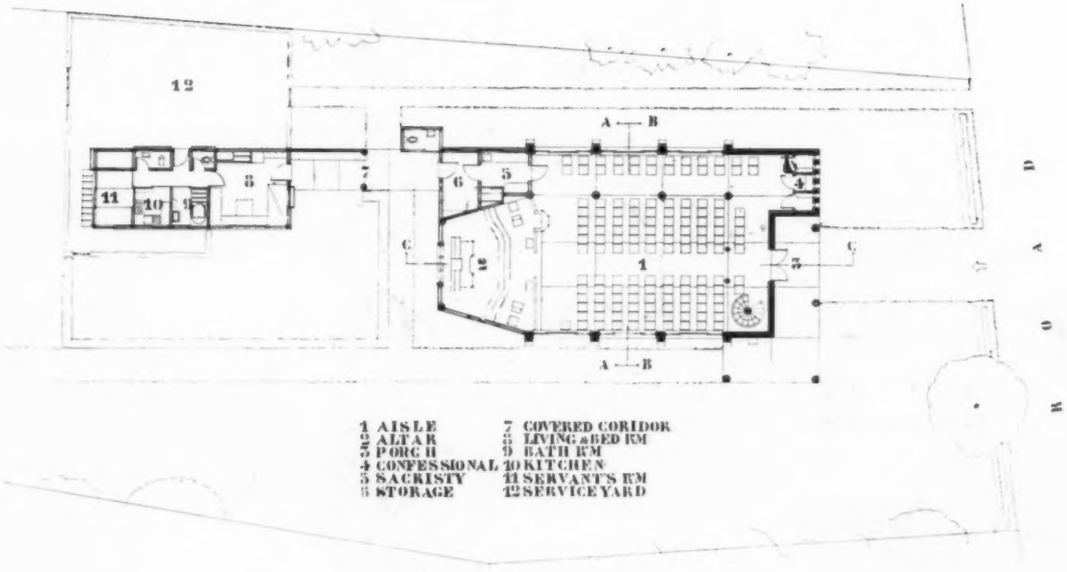
The dining table is redwood. The chairs are made of cherry wood and rope. The color scheme of the Chinese wool rug is taupe and brown.

ANTONIN RAYMOND

ARCHITECT

CHURCH OF SAINT PAUL

This Roman Catholic chapel was built entirely of materials found on the site. Lava aggregate and sand made of lava were used for the concrete walls, cedar and chestnut for the lumber. No plans were used in construction: only verbal instructions were given the workmen after the lumber had been cut and available sizes ascertained. (Measured drawings shown on following pages were made afterwards.)

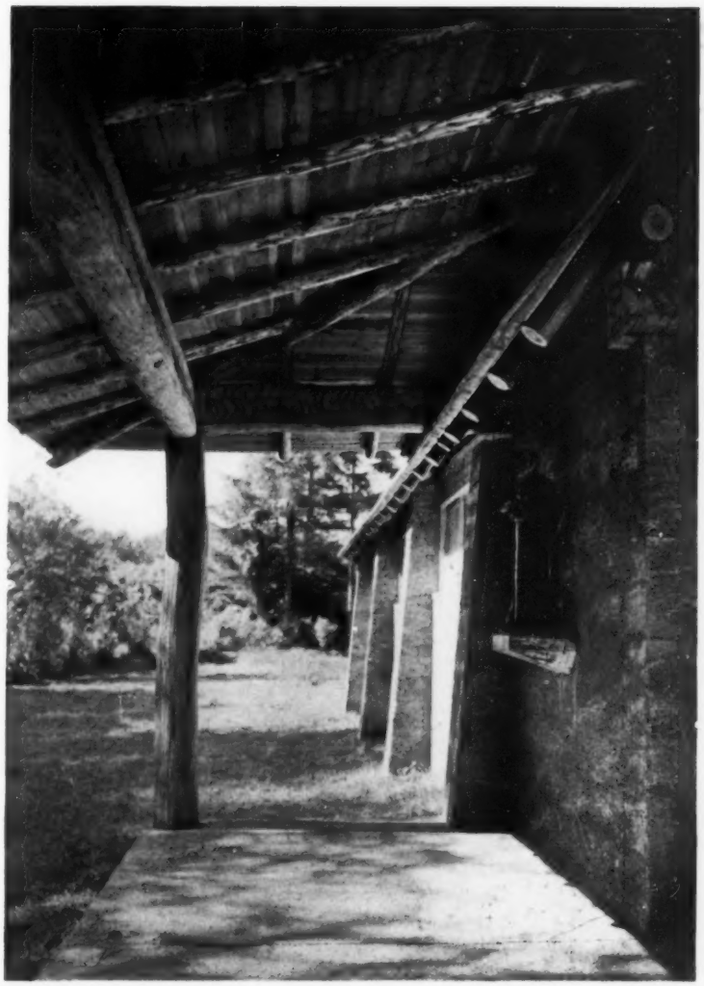


1 AISLE
2 ALTAR
3 PORCH
4 CONFESSIONAL
5 SACRISTY
6 STORAGE
7 COVERED CORIDOR
8 LIVING & BED RM
9 BATH RM
10 KITCHEN
11 SERVANT'S RM
12 SERVICE YARD

CHURCH OF SAINT PAUL

KARUIZAWA, JAPAN

The lava concrete walls are left natural in finish, providing their own colorful texture. Upper walls are cedar and the roof is covered with chestnut shingles. The glass in the sliding wood sash has a design pattern obtained with white rice paper pasted in several thicknesses. . . . The wall of the open porch, with the confessional, is finished in one coat of white plaster. The statue of St. Paul is partly painted and partly left in natural concrete.

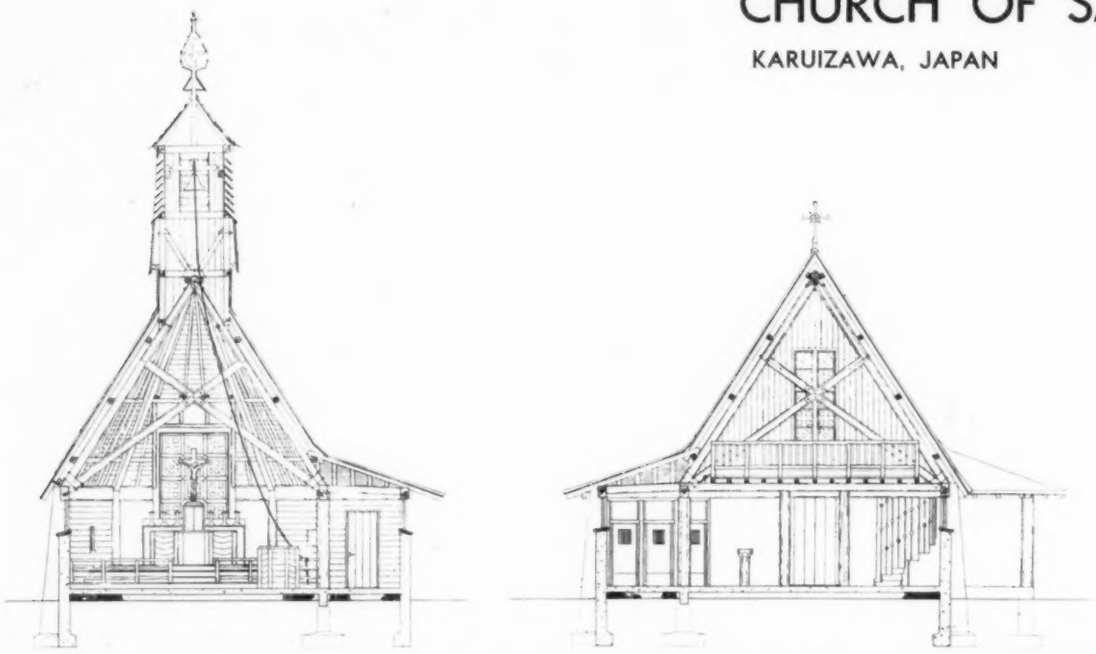


ANTONIN
RAYMOND
SUPERVISING
ARCHITECT

STATUE SCULP-
TURED BY NOEMI
PERNESSIN
RAYMOND

CHURCH OF SAINT PAUL

KARUIZAWA, JAPAN



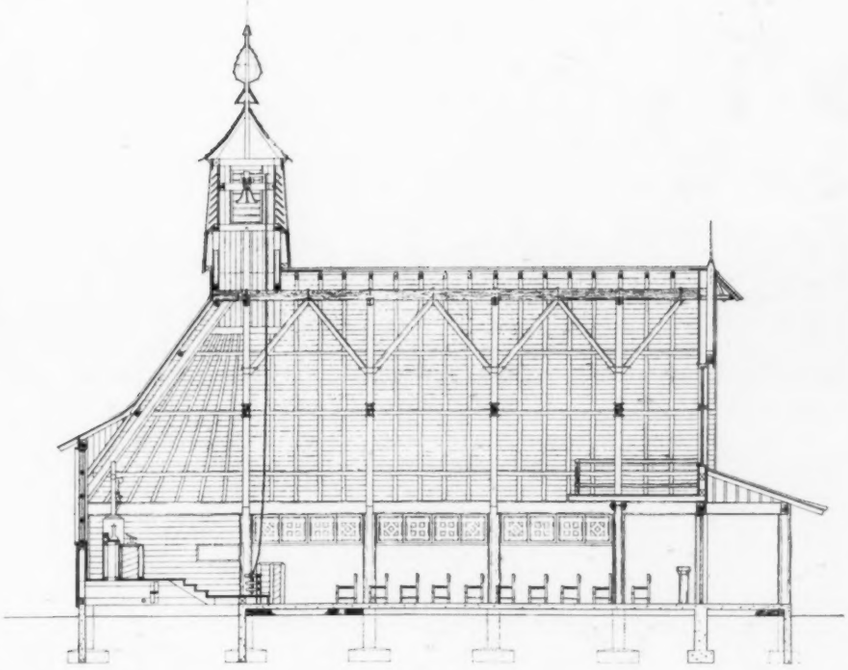
A – A

B – B

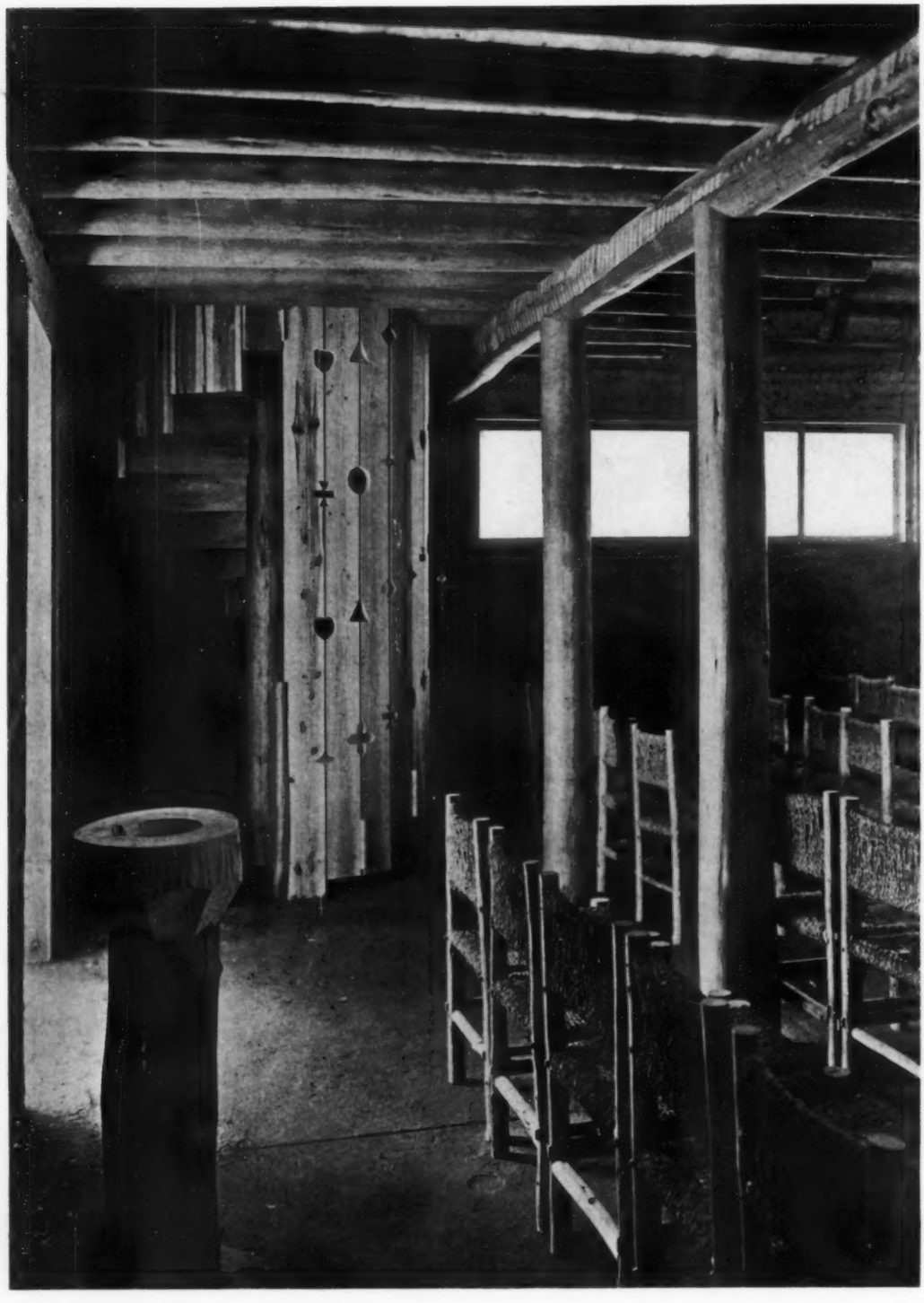
View toward organ loft.

View toward the altar.

ANTONIN RAYMOND
ARCHITECT



C – C

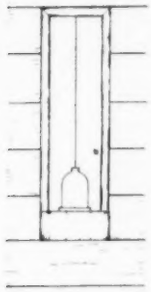


HOLY WATER FOUNT

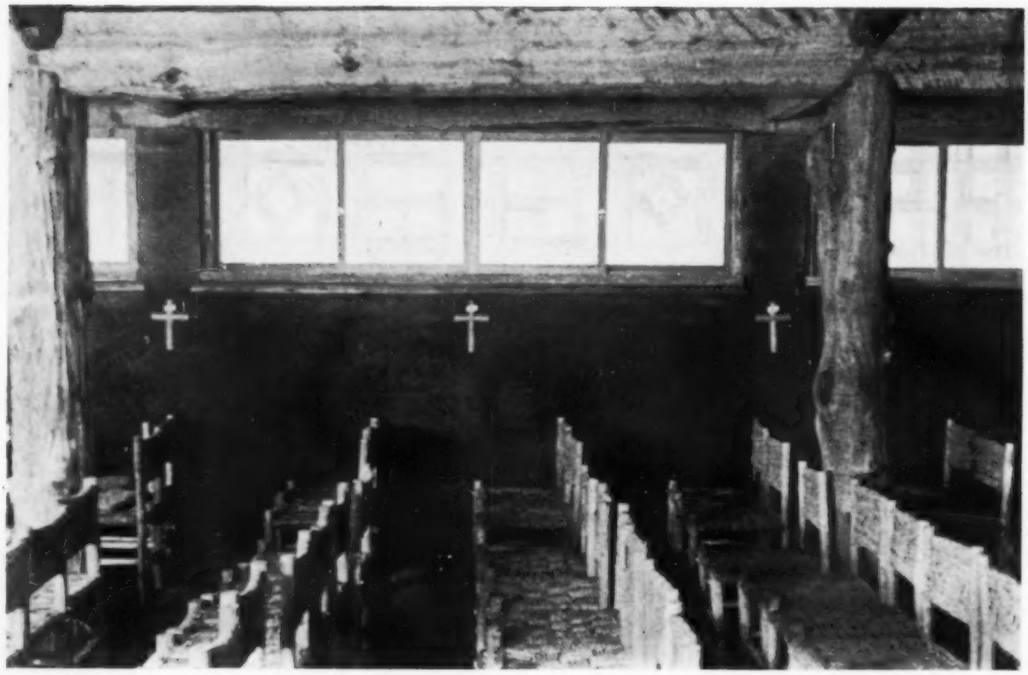
CHURCH OF SAINT PAUL

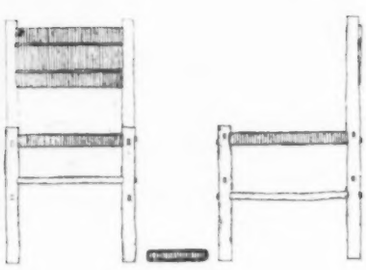
ANTONIN RAYMOND, ARCHITECT

WALL LIGHT NICHE

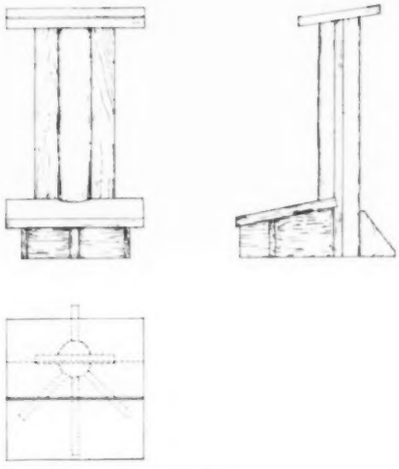


On **opposite page:** The central post of the circular stairway is a natural trunk of cedar, polished by water and sand, with risers grooved into it and suspended from the ceiling by means of planks. . . . **On this page:** The altar is natural cedar, with some parts papered. The wooden crucifix is the design of Mrs. Noemi Pernessin Raymond.





HINOKI STICKS, RICE, STRAW

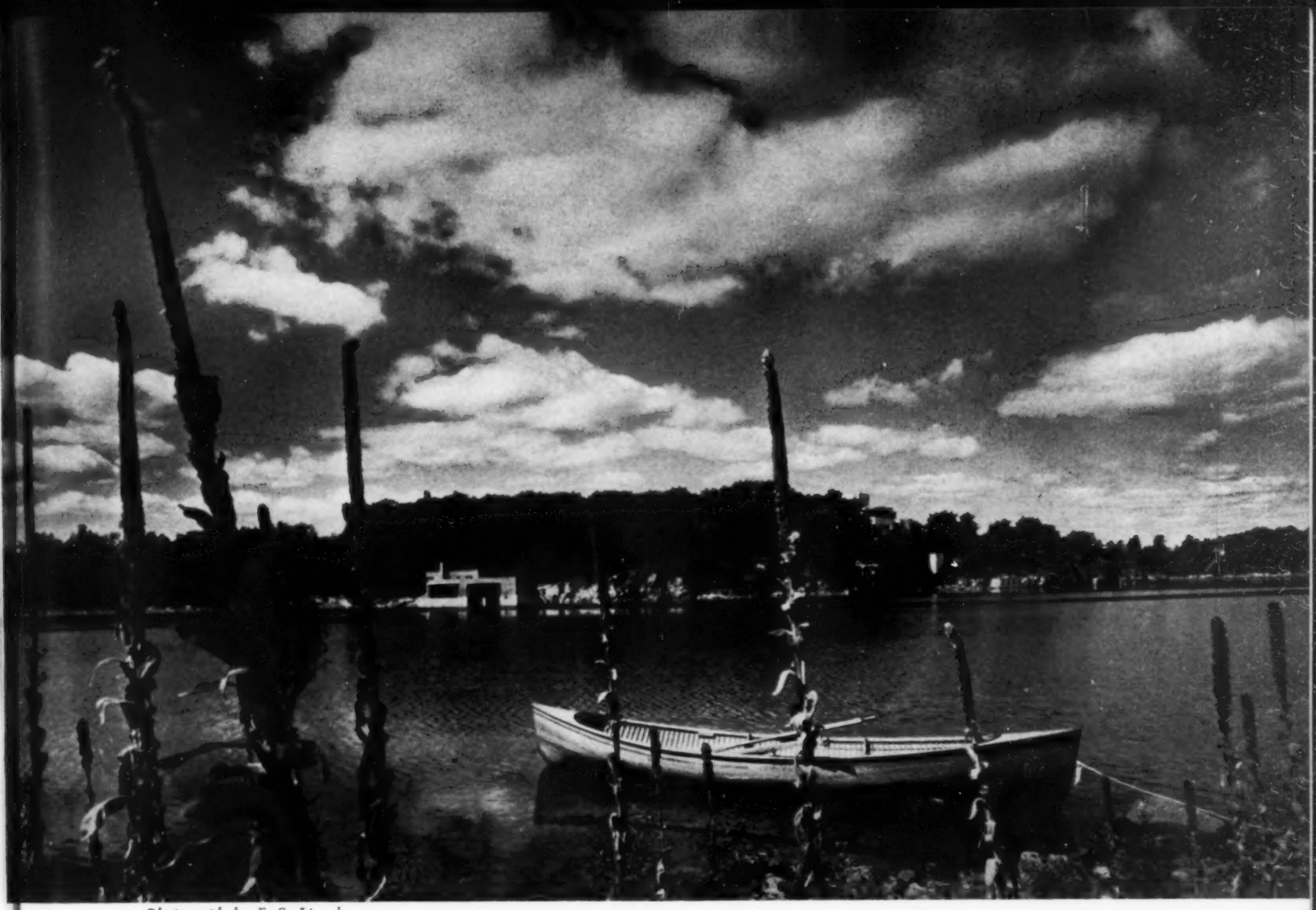


CEDAR

CHURCH OF SAINT PAUL

KARUIZAWA, JAPAN

ANTONIN RAYMOND, ARCHITECT



Photograph by F. S. Lincoln

CONCRETE BOATHOUSE IN CANADA

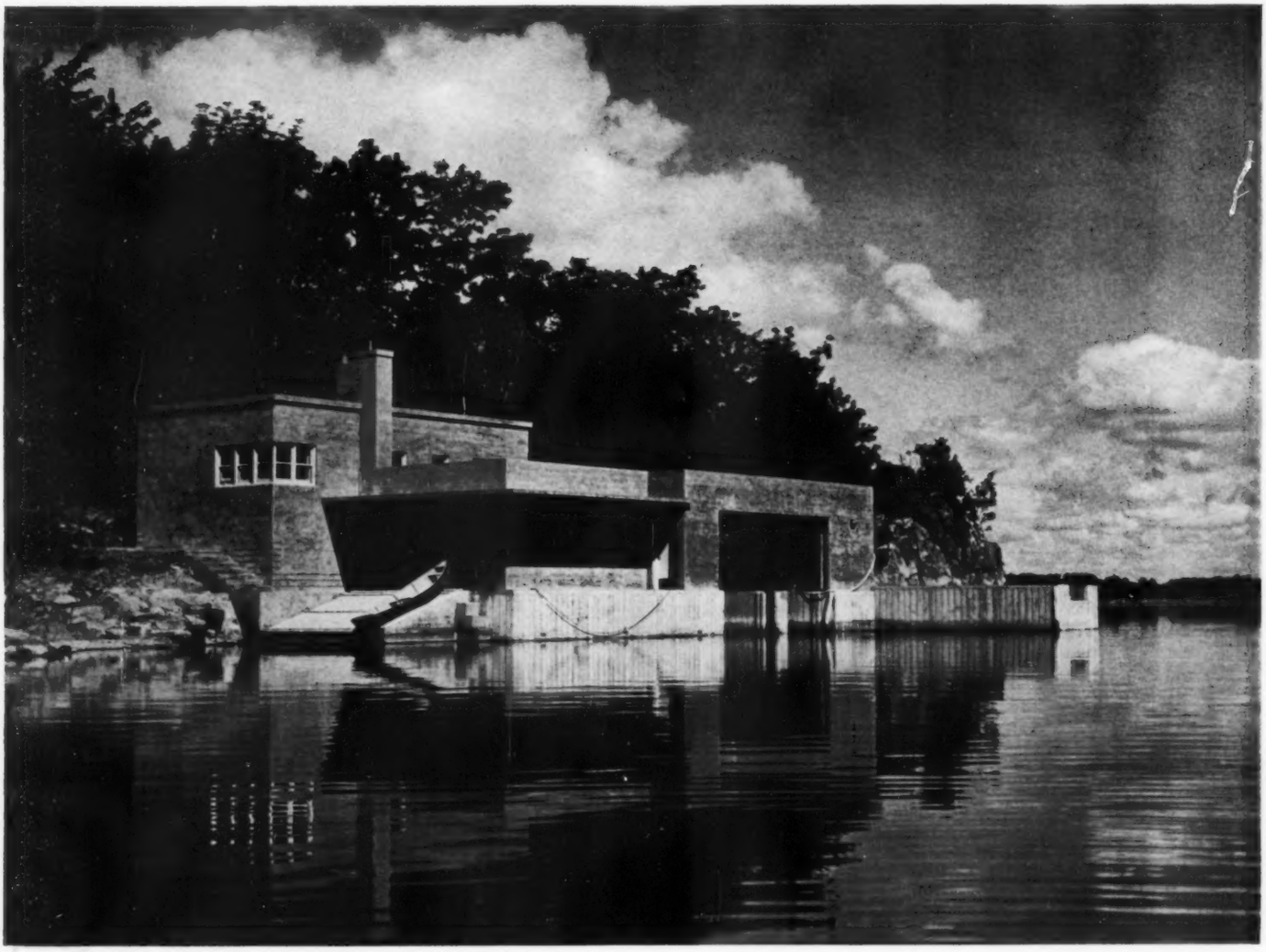
BUILT FOR SHERMAN PRATT

JOHN WALTER WOOD, ARCHITECT

The site of this ferro-concrete structure is a 12-acre thickly wooded, rocky island in the middle of the St. Lawrence River on the northwestern edge of the Thousand Islands, three miles from the Canadian mainland and six miles from the United States. On Niagara Island, owned by Mr. Sherman Pratt, is also situated a concrete house designed and built by Mr. Wood in 1931. Both buildings are intended for all-year usage.

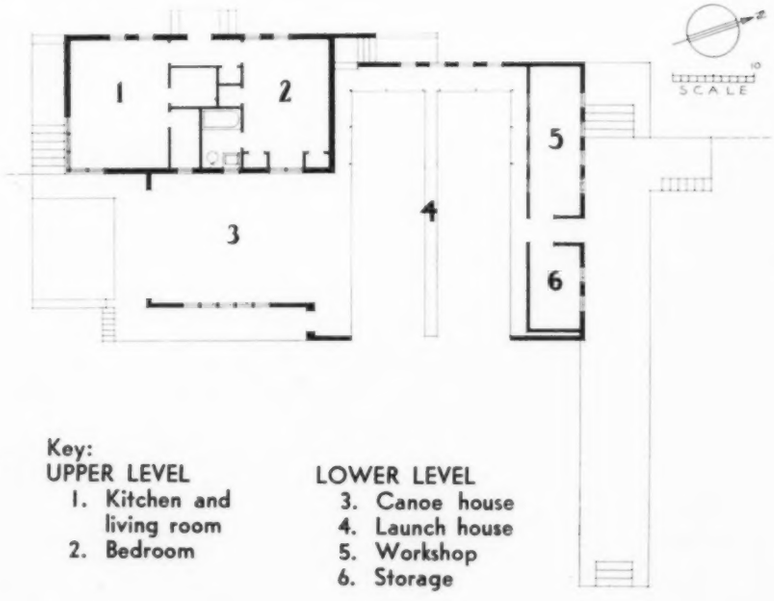
The boathouse has two slips for motor boats, storage for five canoes or rowboats, an inclined slide, a workshop and store room, a boat landing and a 53-foot concrete pier (24 feet cantilevered). The caretaker's quarters are on an upper level and comprise a double bedroom and bath, a combined kitchen and living room, a large store room, and a small pump room.

Contractors: J. L. E. Price & Company, Ltd., of Montreal.



BOATHOUSE OF SHERMAN PRATT

The main house is on a rock bluff 35 feet above the river over which it commands an extensive view. The rocky shore below drops off steeply to depths of water varying between 100 feet and 200 feet. It was therefore necessary to locate the boathouse a few hundred feet to the west on the southern shore in a small natural cove. Some rock excavation was done in order to move the boathouse inshore and thus reduce the depth of the underwater foundations.



Key:

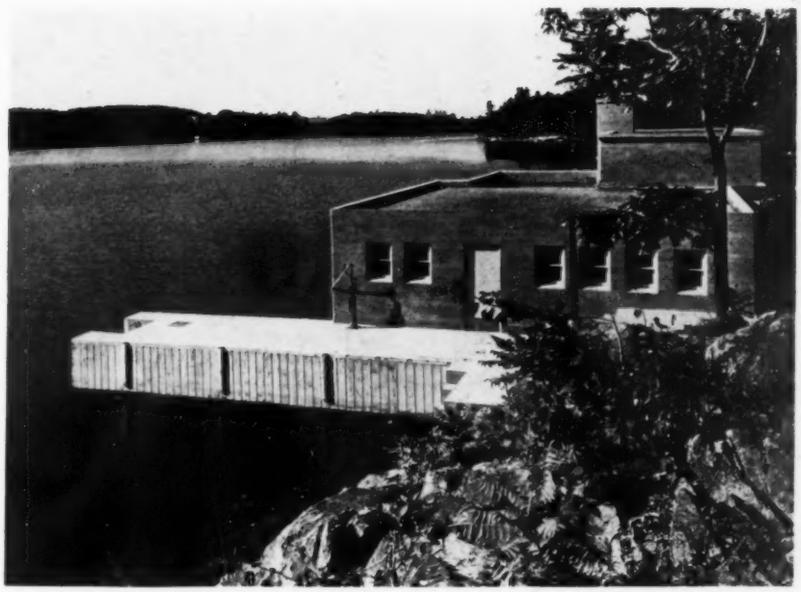
UPPER LEVEL
1. Kitchen and living room
2. Bedroom

LOWER LEVEL
3. Canoe house
4. Launch house
5. Workshop
6. Storage

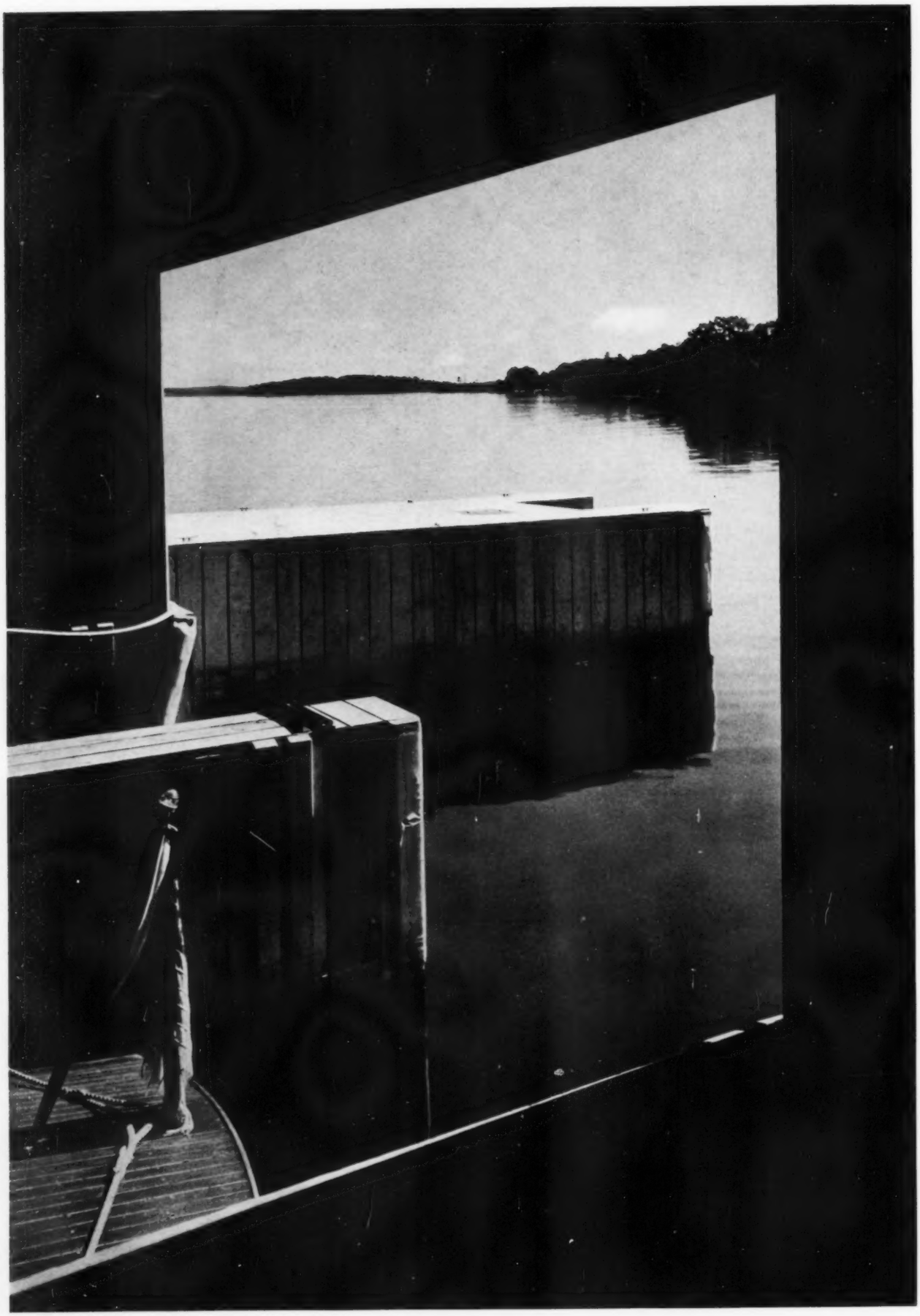
JOHN WALTER WOOD, ARCHITECT

Walls, floors, roof slabs, steps, boathouse slip, boat landing and breakwater are concrete. Floors, ceilings, partitions and interior walls in the caretaker's quarters are wood, and the walls in the workshop and store room are plaster. An air space is provided between the concrete and the interior wood finish, and 2 inches of cork board and a Barrett specification roof have been used over the living quarters. Wood forms were used for the 6-inch concrete walls and a smooth finish obtained by electrically operated carborundum discs.

Powdered pigment was mixed with dry cement to obtain a reddish cast in the exterior concrete. This color was selected as a contrast to the dark green of the woods. The interior of the boat and canoe house was given a coat of white cold-water paint, and the windows were finished in a warm gray buff.

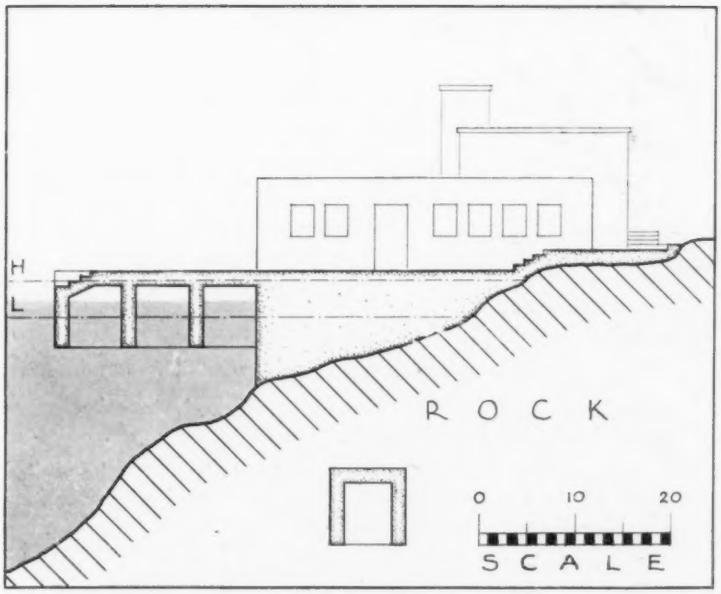


Photographs by F. S. Lincoln

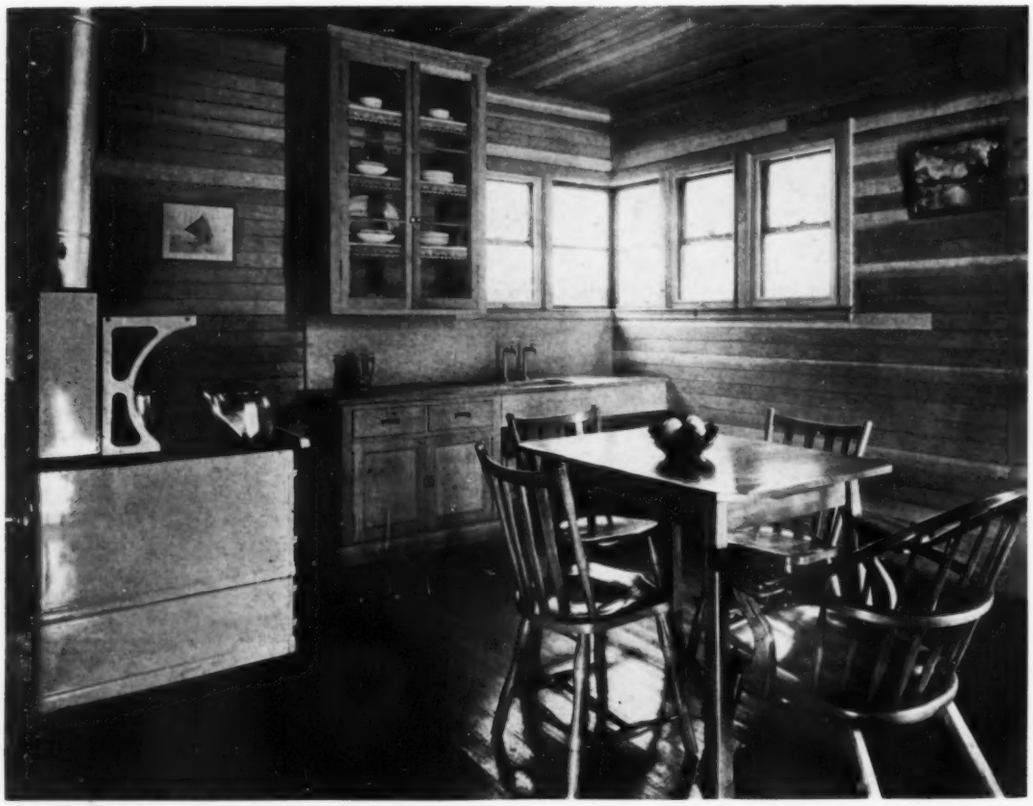


Photographs by F. S. Lincoln

A breakwater (see photograph on opposite page) was necessary to protect the maneuvering of boat at the landing from a 10-mile sweep of the river to the northeast. A water depth of 35 feet was found at the proposed location of the end of the dock. Therefore instead of being built solid to rest on the river bottom, the dock was cantilevered, as shown in the accompanying sketches of the longitudinal and transverse sections. This hollow cantilever of reinforced concrete saved extensive under-water work and provided increased strength in resisting lateral and vertical pressure from the ice of the St. Lawrence River. It is estimated that by its use only one-fifth of the building material was required which otherwise would have been necessary.



JOHN WALTER WOOD, ARCHITECT



Photograph by F. S. Lincoln

LIVING ROOM IN BOATHOUSE OF SHERMAN PRATT

NIAGARA ISLAND, GANANOQUE, ONTARIO **JOHN WALTER WOOD, ARCHITECT**

In the combined living room and kitchen of the caretaker's quarters a special coal-burning stove combines the uses of a cooking stove and a furnace in one unit. It is made by the Heaterange Corporation of Jeddo, Pennsylvania. Air is heated in the stove, which is no larger than an ordinary small kitchen range, and then distributed by gravity to the various rooms through ducts. An electric fan connection in the duct system accelerates the distribution of heated air when necessary. The heating system normally supplies the required amount of heat by gravity: during the past winter, which was somewhat more severe than usual, the caretaker used the fan less than half a dozen times. The consumption of coal was surprisingly low.

Electricity is furnished by a Lister Bruston electric power plant located on another part of the island and built to furnish electricity for the main house.

The pump room houses a pressure tank and a gasoline-operated water pump which supplies water from the river.

Two movable chain hoists are provided above the boat slips for lifting the engines out of the boats, for raising the boats out of the water for winter storage, and for raising them to change propellors.

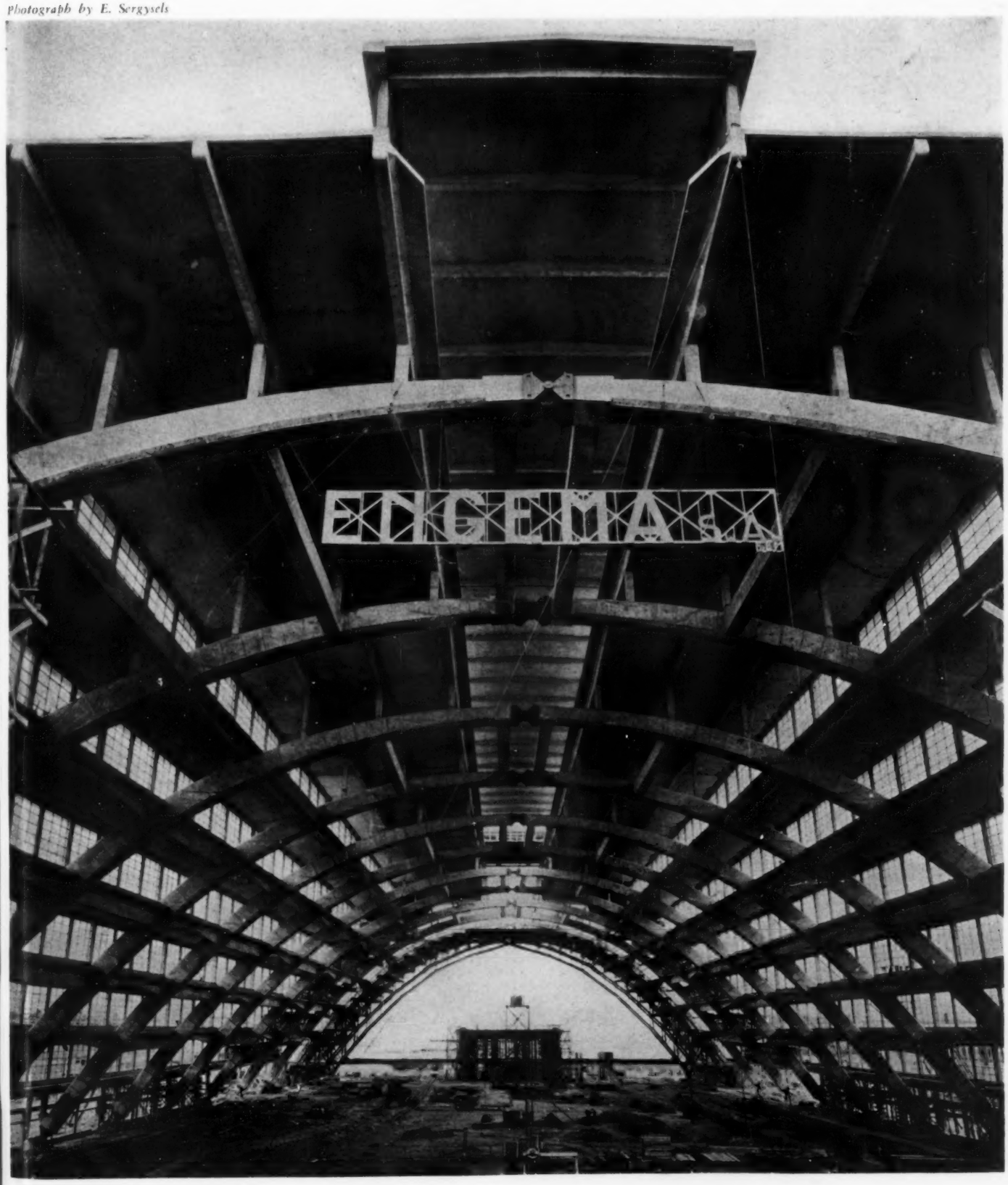
The rocky nature of the terrain near the boathouse made a septic tank impractical To avoid contamination of the river water, a Kaustine tank is used for sewage disposal.

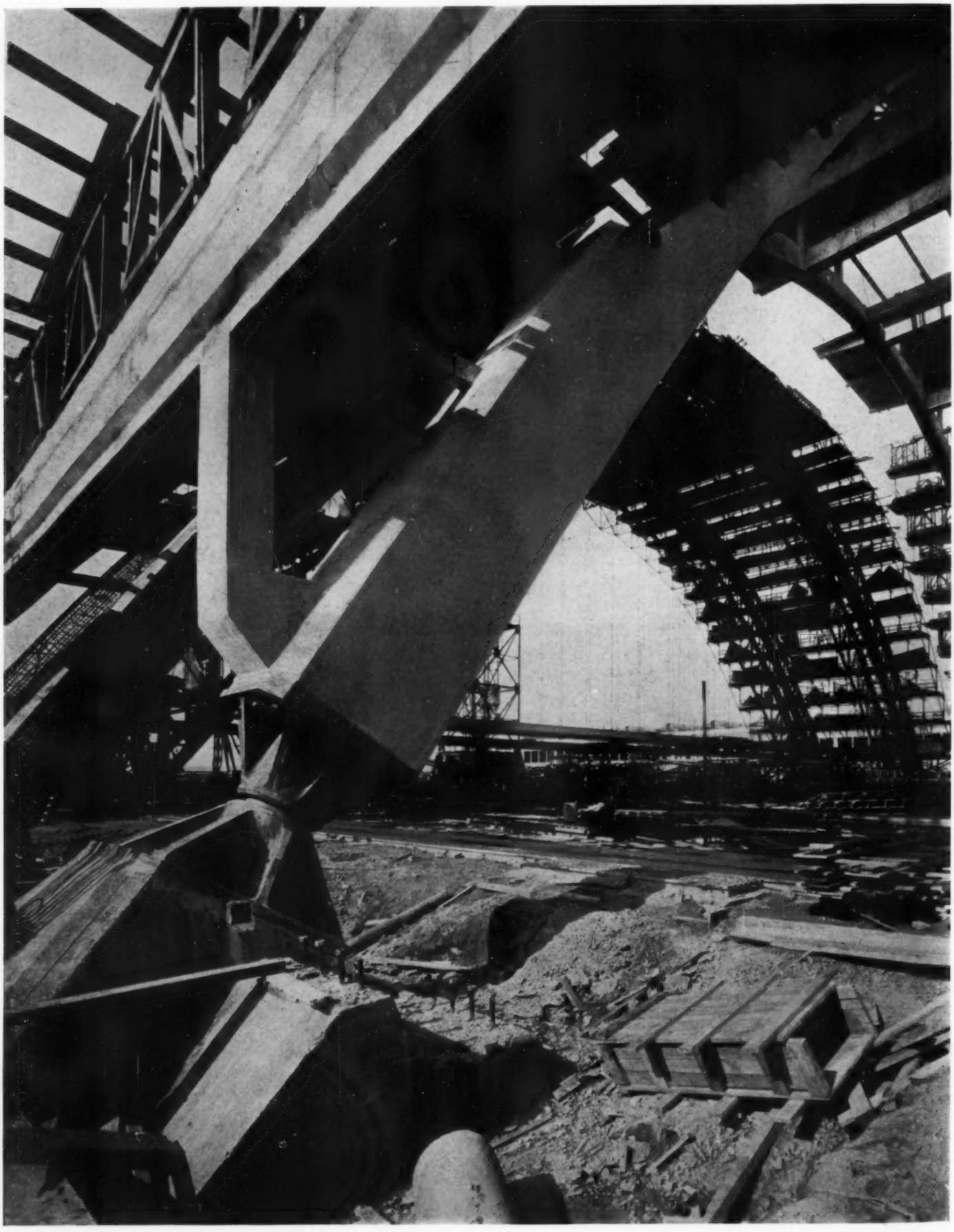
GRAND CENTRAL PALACE OF BRUSSELS EXPOSITION

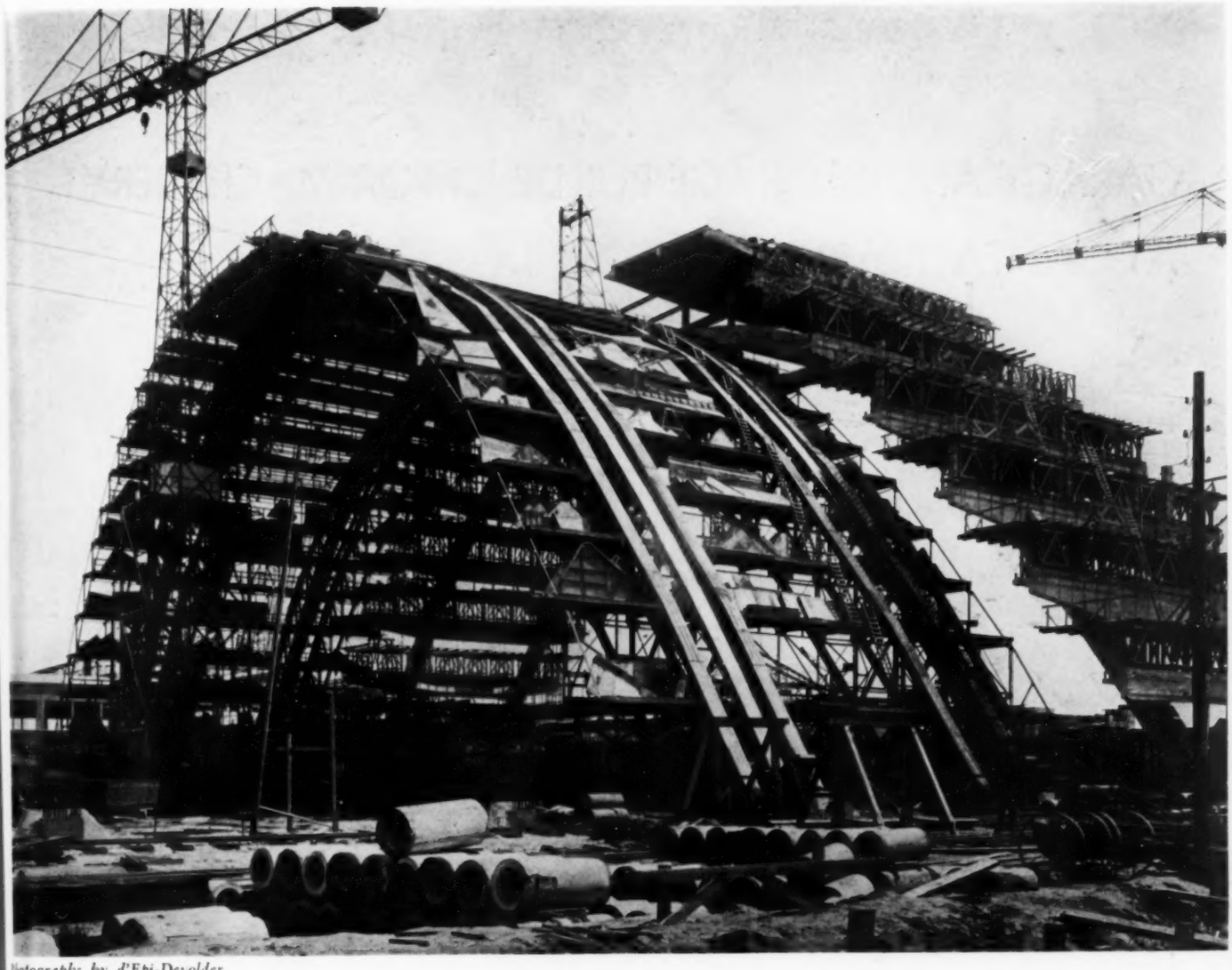
J. VAN NECK, ARCHITECT

LOUIS BAES, CONSULTING ENGINEER

Photograph by E. Sergysels







Photographs by d'Epi-Devolder

THE BRUSSELS GRAND CENTRAL PALACE UNDER CONSTRUCTION

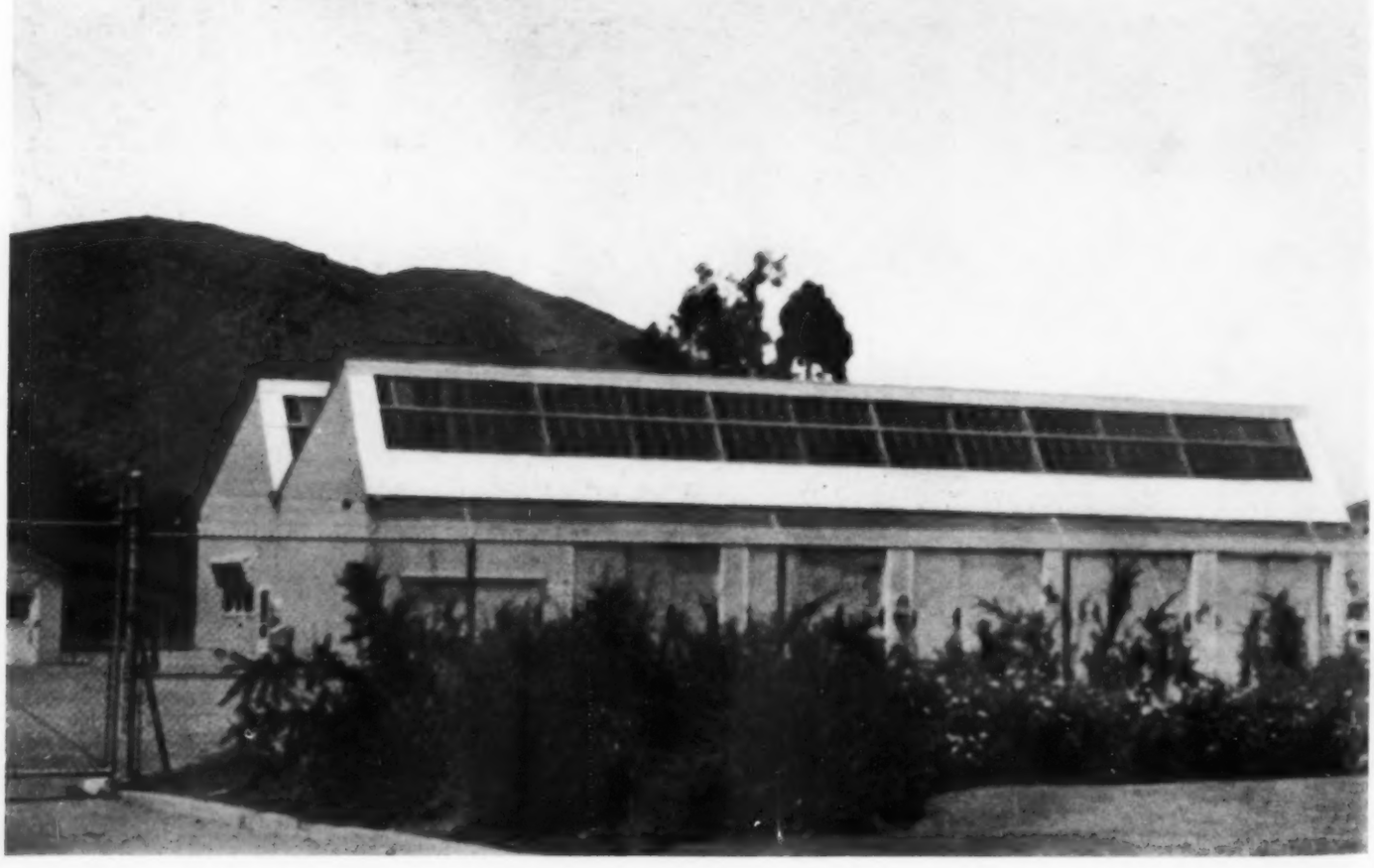
J. VAN NECK, ARCHITECT

LOUIS BAES,
CONSULTING ENGINEER

This huge structure envelops a clear area of 3¾ acres, entirely unbroken by interior supports. The hall is 528 feet long and its concrete slab roof-terraces and the glass window-walls are supported on twelve great arches spaced about 40 feet apart with a span of 282 feet and a rise of almost 100 feet. At the crown of each arch is a cylindrical metal hinge, and at the footings are spherical metal hinges. . . . The reinforced concrete arches are tied in pairs by beams cast in place with the arches. Cantilevered beams extend on both sides of these paired arches for a distance of about 20 feet. This arrangement makes each group of arches completely independent of the adjoining groups. The framework is, in effect, a series of six bridges, each composed of two arches coupled together. Both façades inclosing the ends of the structure are self-supporting and totally independent of the arches. . . . Oblique reaction on the footing hinge is about 850 tons, and the thrust upon the crown hinge is 300 tons. The arches rest on massive foundations of concrete which distribute the load of each arch to 29 piles. . . . The coupled arches were erected by means of movable steel centering arches having the shape and dimensions of the lower curve of the concrete arches. Reinforcement for each arch comprises about 60 tons of steel, fabricated in 1-ton sections on the ground and hoisted into the forms by a crane.

GARAGE AND STORAGE BUILDING FOR MACHINERY AT SANTA MARIA, CALIFORNIA

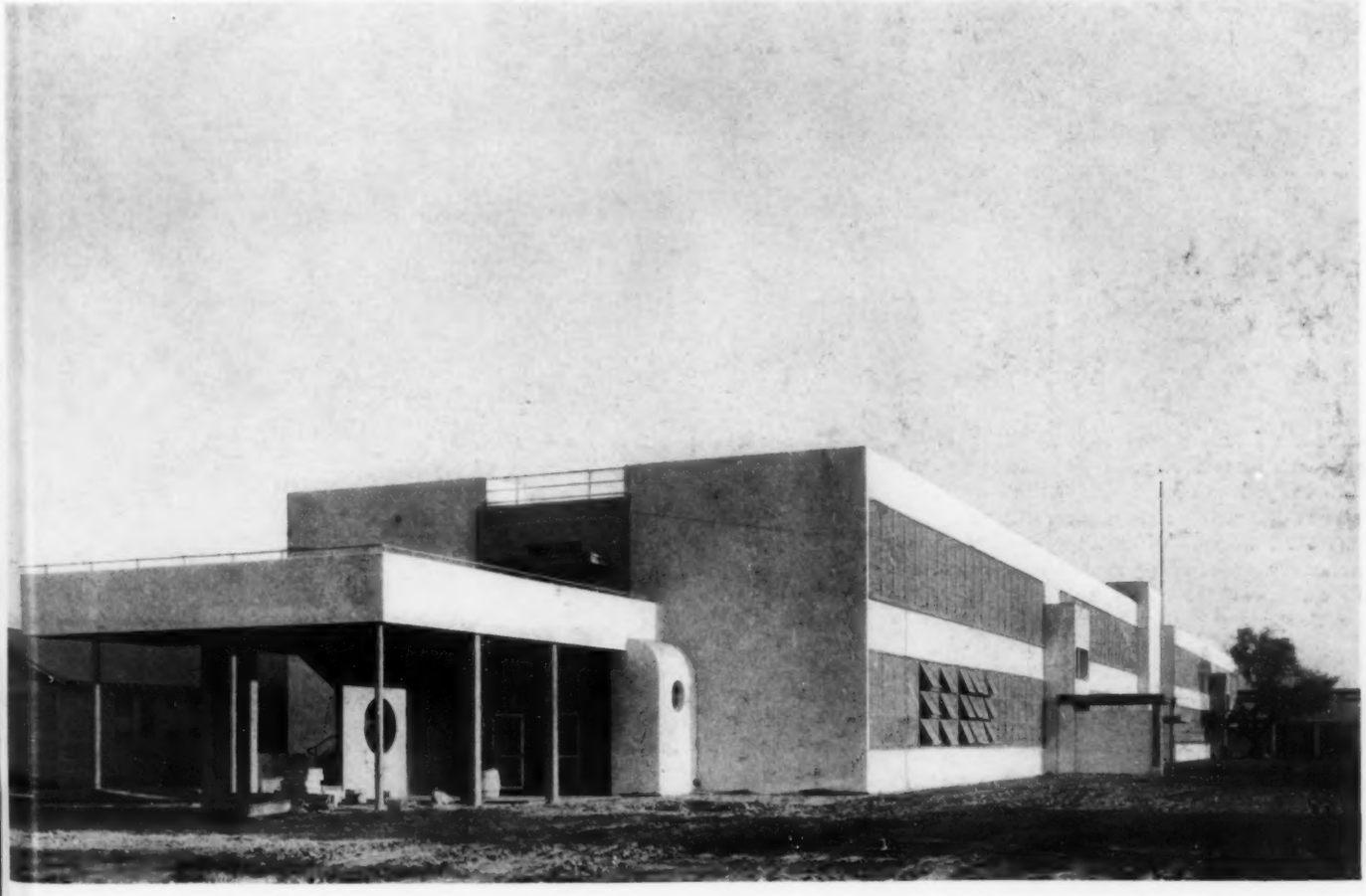
BUILT BY CALIFORNIA STATE DEPARTMENT OF ROADS



POLYTECHNIC HIGH SCHOOL IN LONG BEACH, CALIFORNIA

HUGH R. DAVIES, ARCHITECT

Photograph by courtesy of E. L. Bruce Co. who supplied the flooring.



Photograph by Sigfrid Larson

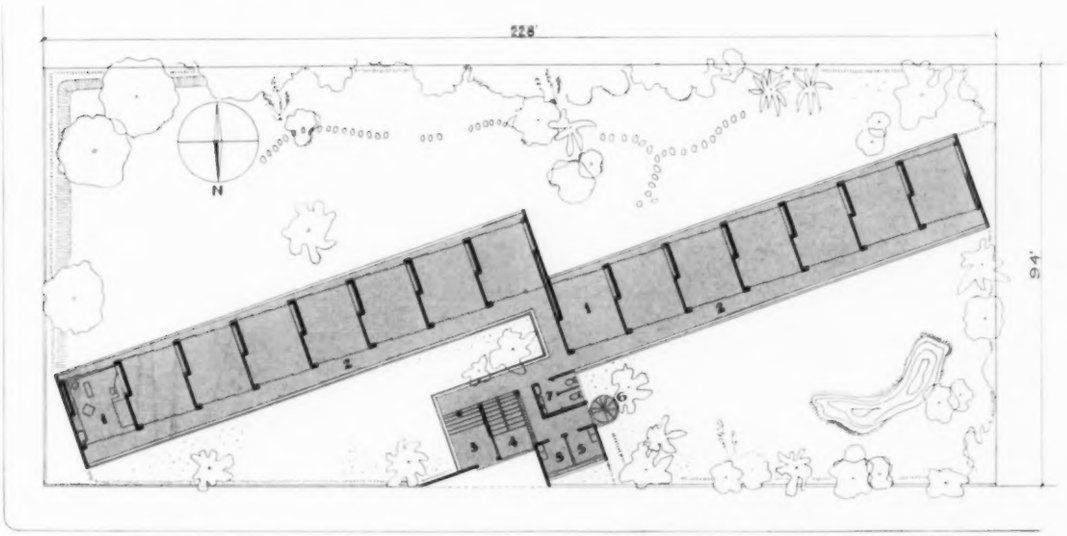
NEW CALVERT BRIDGE IN WASHINGTON, D. C.

MODJESKI, MASTERS AND CHASE, ENGINEERS

PAUL P. CRET, CONSULTING ARCHITECT

WORKING DRAWINGS BY ANTONIN RAYMOND

The structural systems and mechanical details illustrated in this section were designed for foreign buildings but are based on American practice.

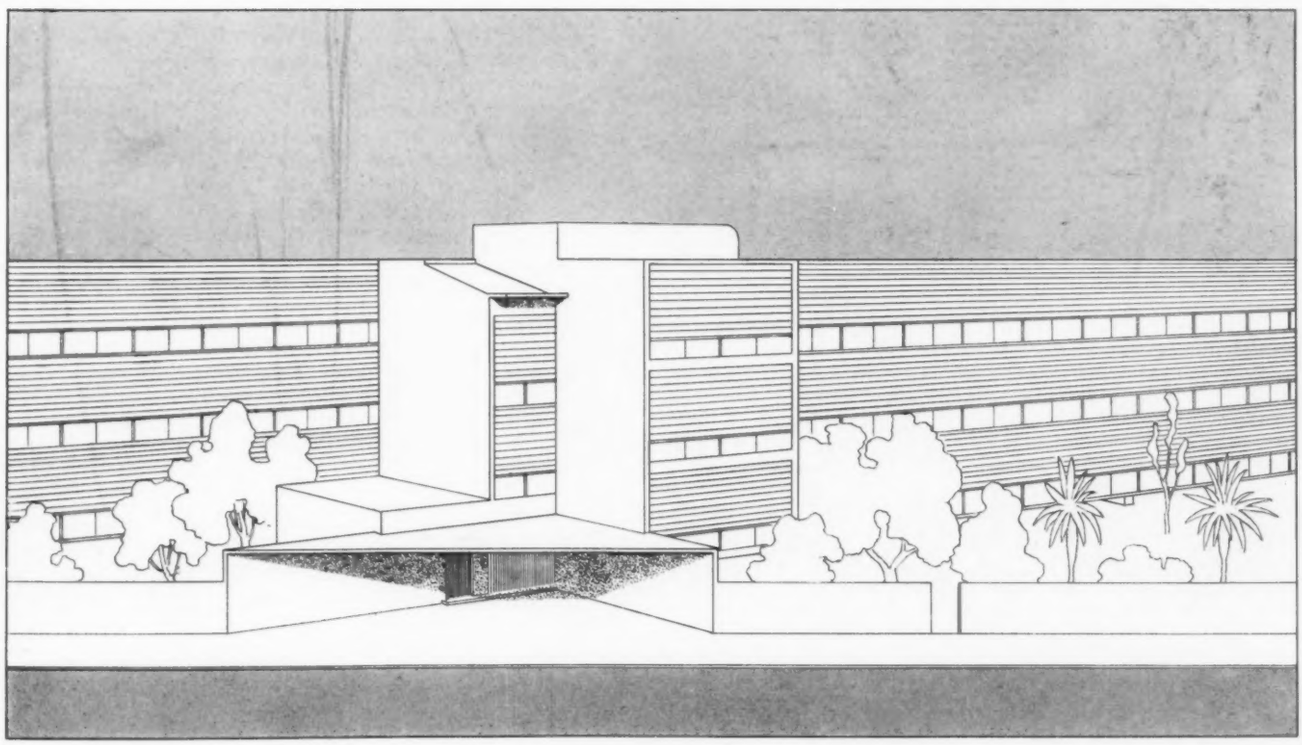


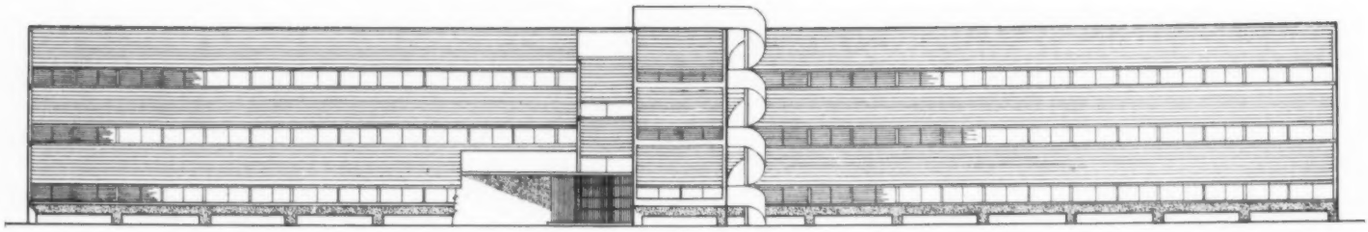
FIRST FLOOR PLAN

0 5 10' 15' 20' 25'

1 STUDENT'S R'M
2 CORRIDOR
3 VESTIBULE
4 STAIRS
5 SHOWER
6 SERVICE
7 W. C.

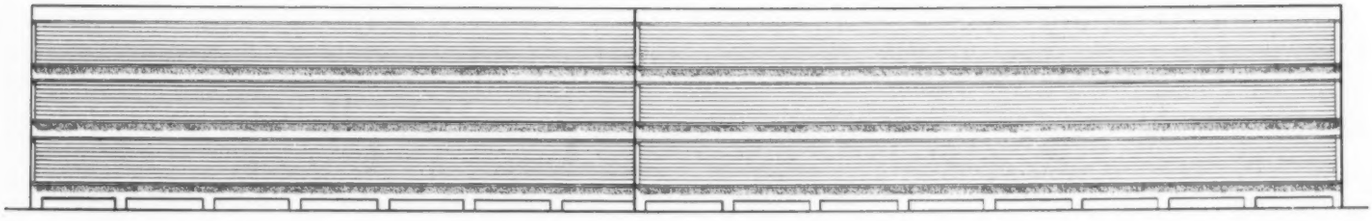
A STUDENTS' DORMITORY AT PONDICHERRY, INDIA

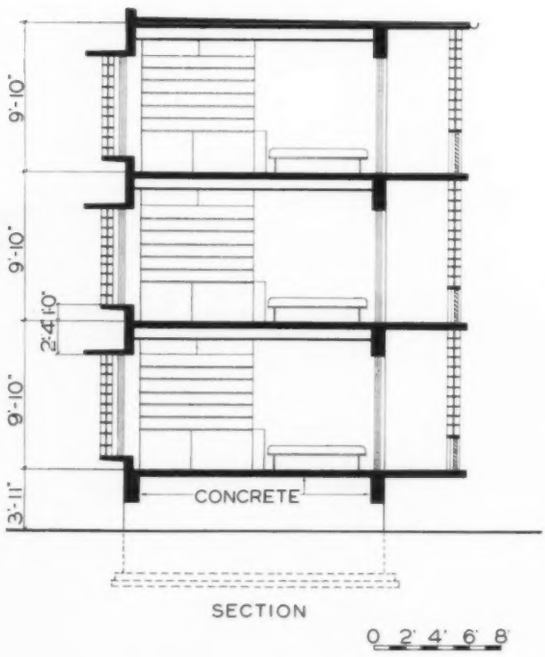




Entrance Façade of Dormitory

Garden Elevation





SECTION

0 2' 4' 6' 8'

The climate is tropical and comparatively dry, except during the rainy season when the rainfall is accompanied by winds.

The building is orientated towards the south and southeast and placed on the lot in such a way as to give adequate gardens of interesting shapes. All rooms face south-southeast and have full-width cross-ventilation. Toilets and baths are centrally located.

The mess hall and kitchen are in another building.

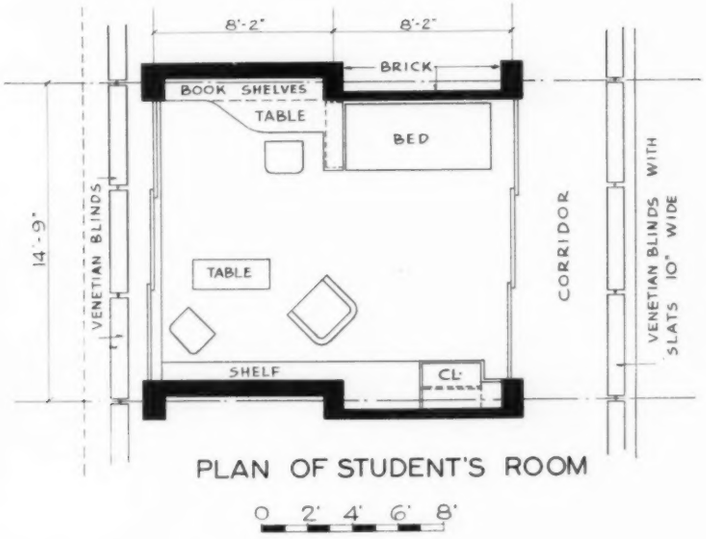
The simplicity of construction offers economy of cost. Brick is quite cheap in the locality, so the bearing walls are built of this material and designed to accommodate built-in furniture. The first floor, a reinforced concrete slab, is raised on brick piers from the ground for the sake of dryness, then the brick wall is continued again with another concrete floor slab and so on up to the roof. There are no curtain walls except on the two ends. The corridor slab is cantilevered from the main slab and the window overhangs and the sills are also monolithic with the floors.

Venetian blinds with wood blades about 8 inches wide protect the interior against glare; overhangs give protection against direct sunshine. Sliding wood sash allow full closing in case of driving rain.

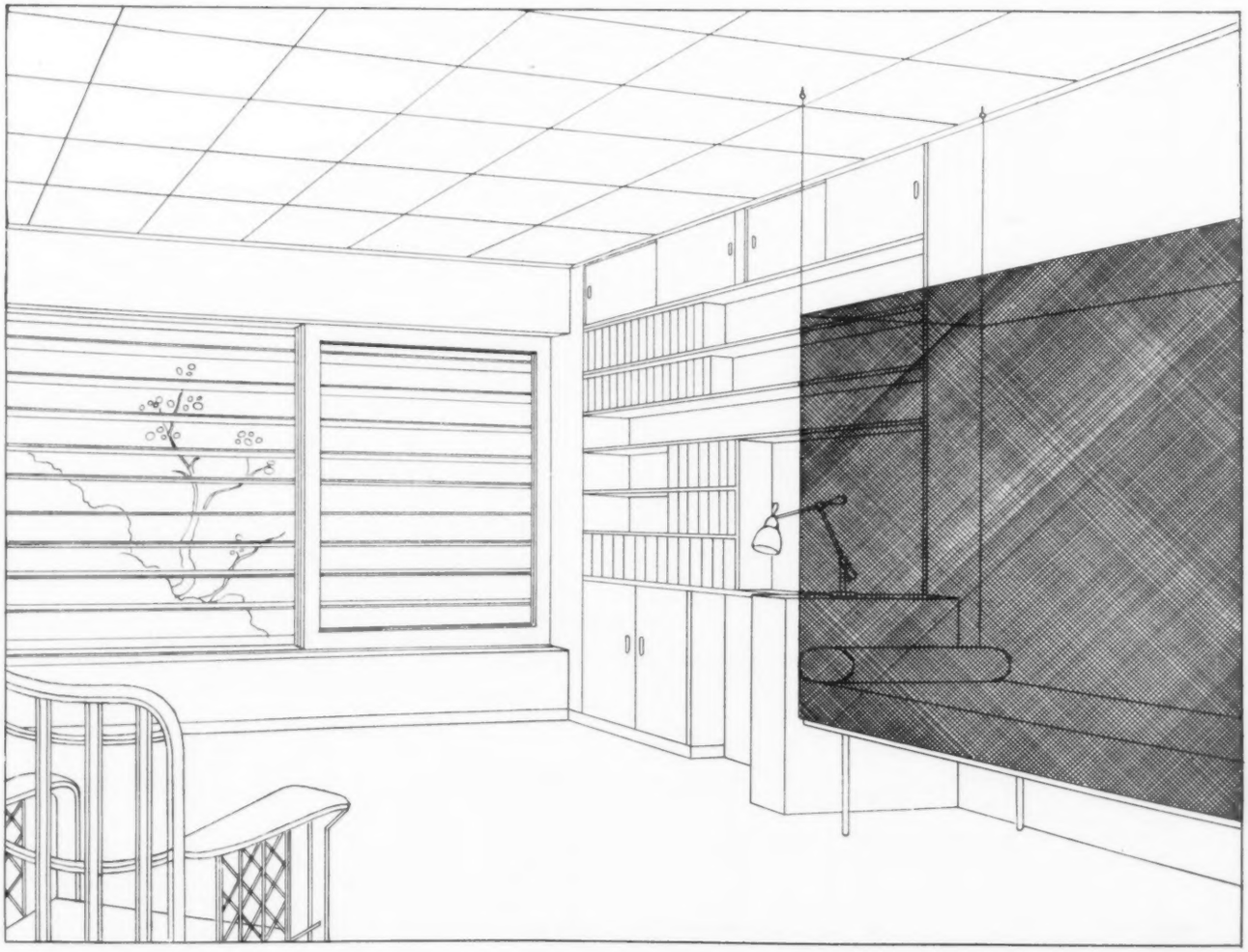
Sliding doors, consisting of light wood frames covered with cloth, separate the dormitory rooms from the open corridor which is provided with wide-bladed Venetian blinds only, for protection against weather.

WORKING DRAWINGS BY ANTONIN RAYMOND

A STUDENTS' DORMITORY AT PONDICHERRY, INDIA



A student's room—the furniture is built-in and open blinds give full ventilation.



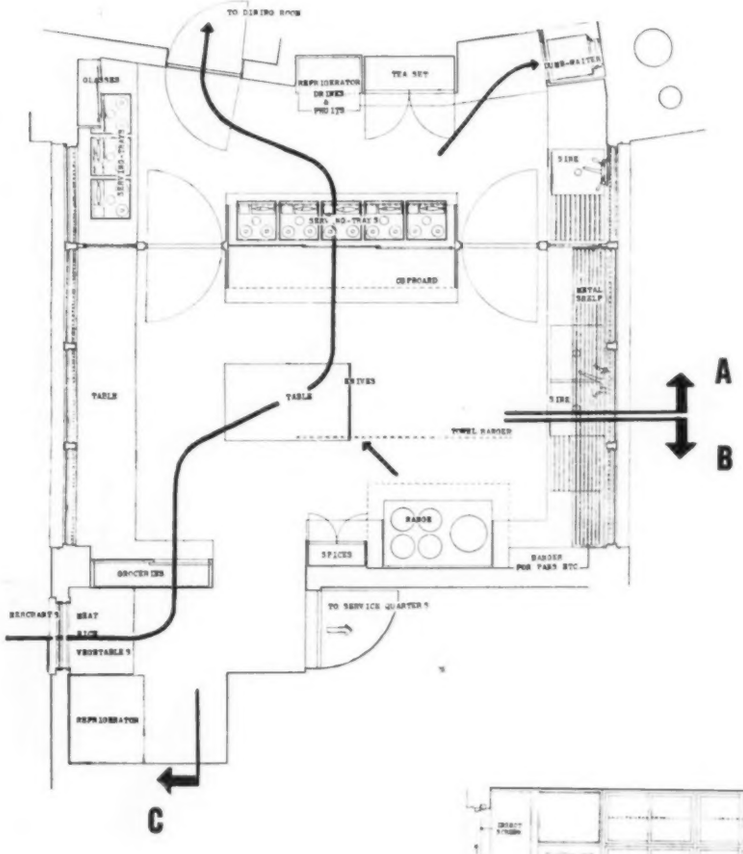
A KITCHEN AND PANTRY

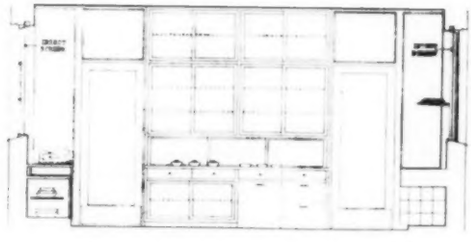
House of Tetsuma Akaboshi (see pages 10-29)

SPICES

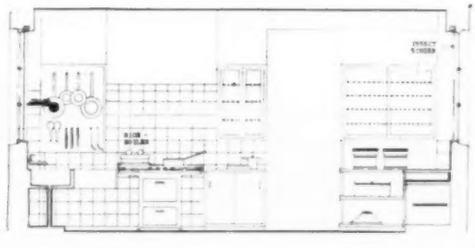
TEA

RICE

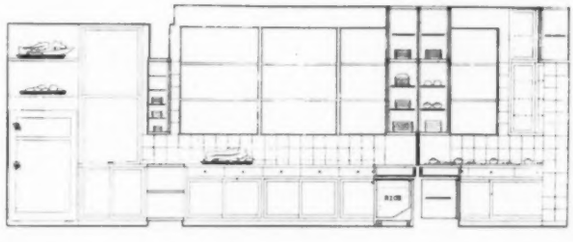




A Section Toward Pantry

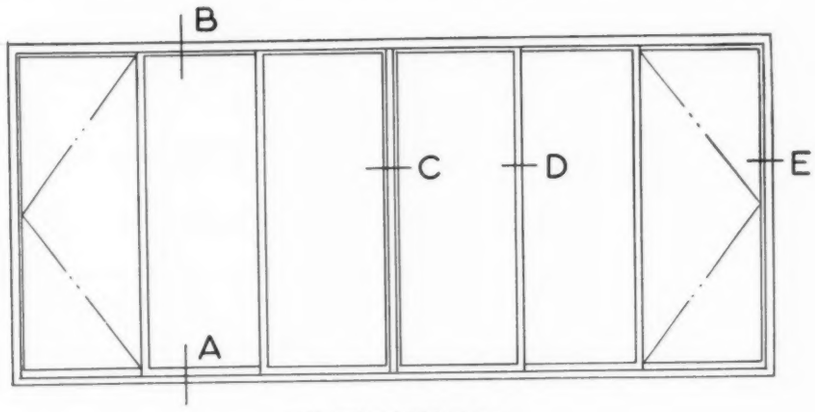


B Section Toward Range



C Longitudinal Section

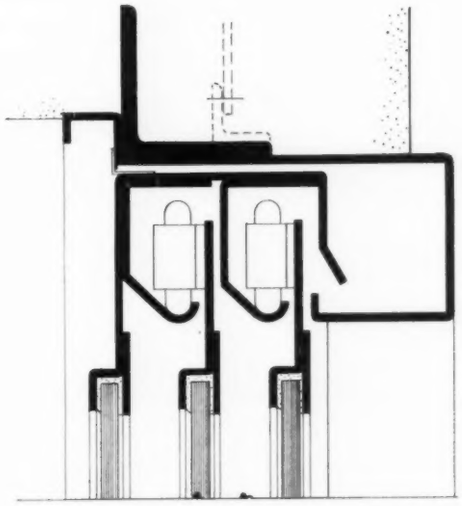
WORKING DRAWINGS BY ANTONIN RAYMOND



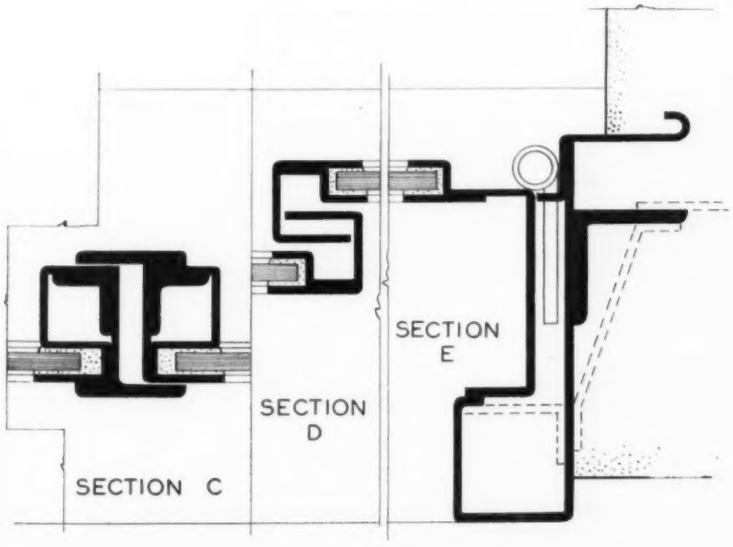
ELEVATION

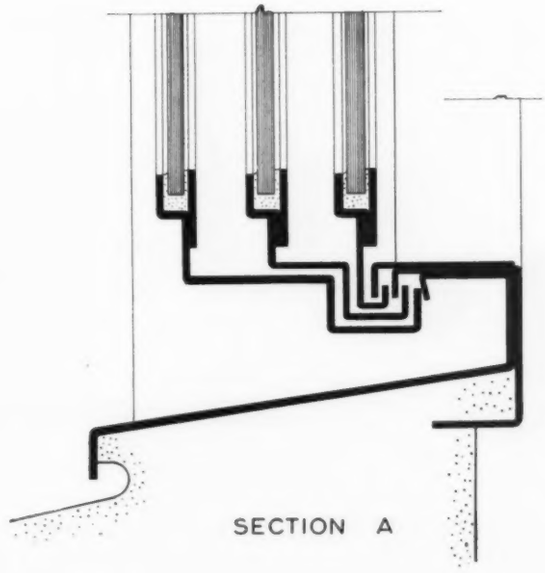
SLIDING - FOLDING WINDOW FRAME

This casement is an adaptation of a customary Oriental door opening, such as the one illustrated on page 26, in which the four middle door panels slide two to each side into position with the end doors and then both sets of three panels each swing on hinges, thus leaving the entire opening unobstructed. In this adaptation American methods of fabrication are utilized: the sash and sections are stamped steel, and the profiles are reduced to a minimum of metal necessary for protection against moisture penetration and for a sturdy but light construction.



SECTION B

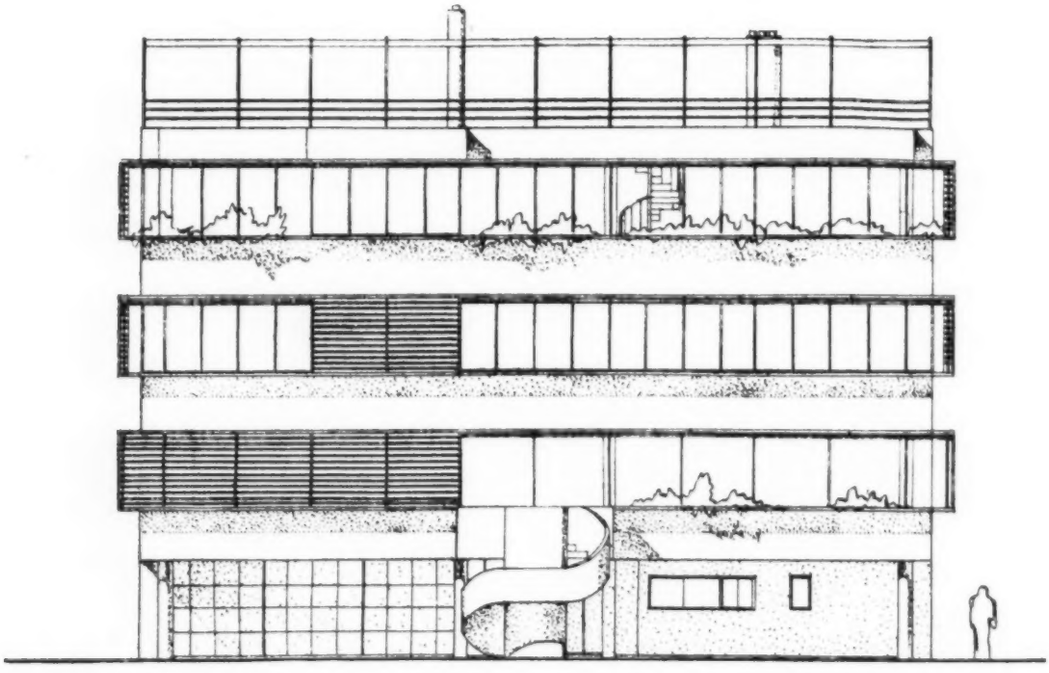




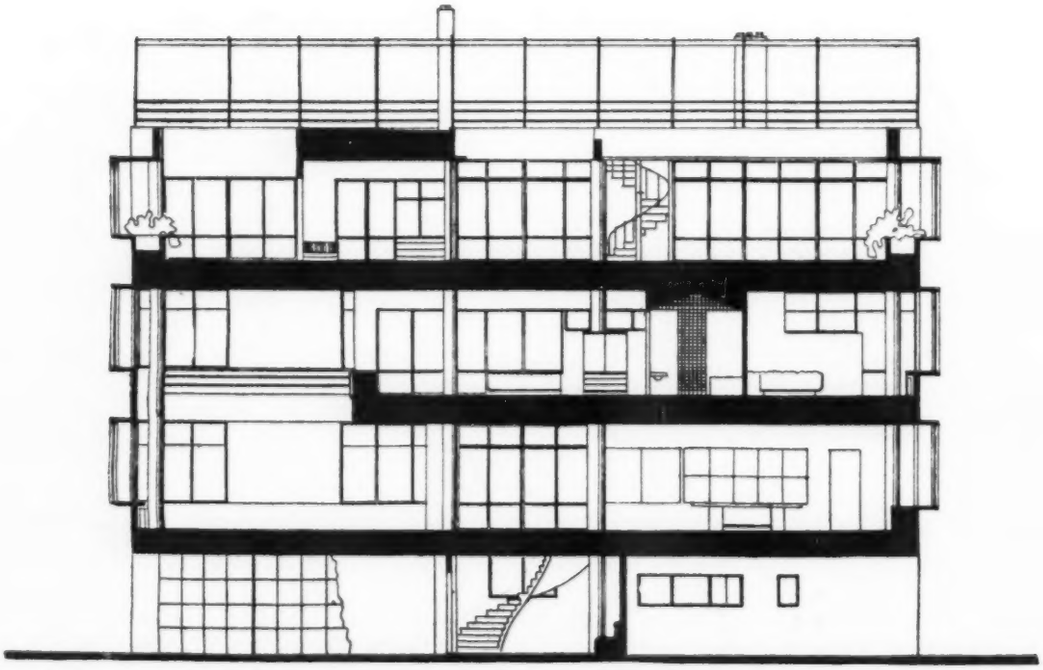
SECTION A

WORKING DRAWINGS BY ANTONIN RAYMOND

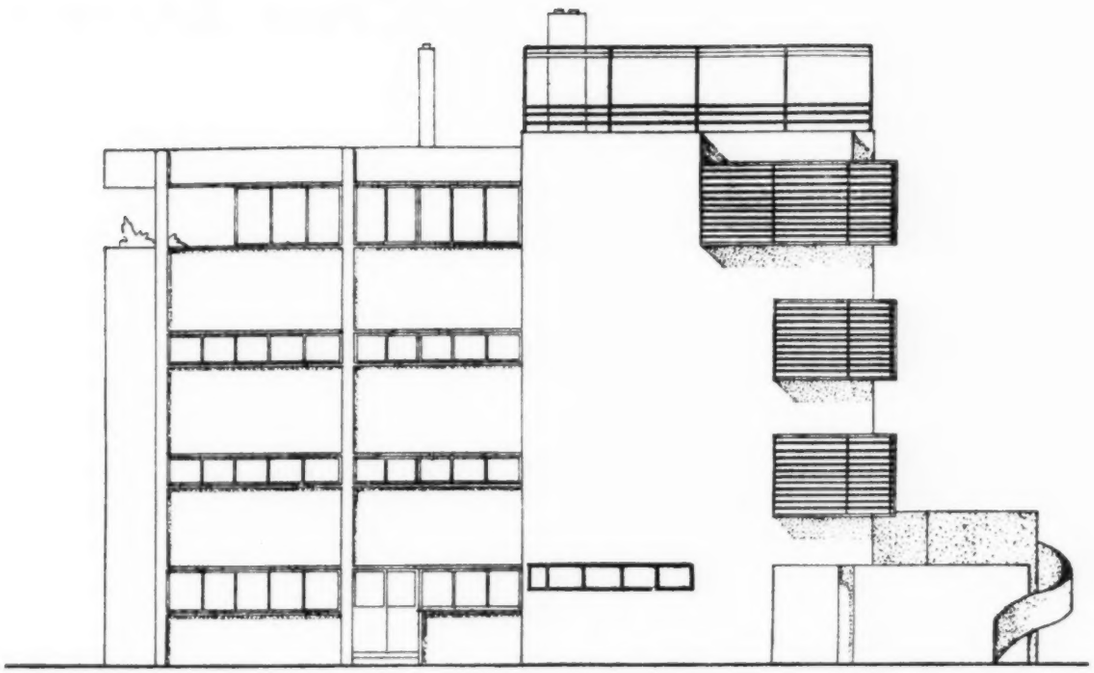
A TOWN RESIDENCE IN SHANGHAI, CHINA



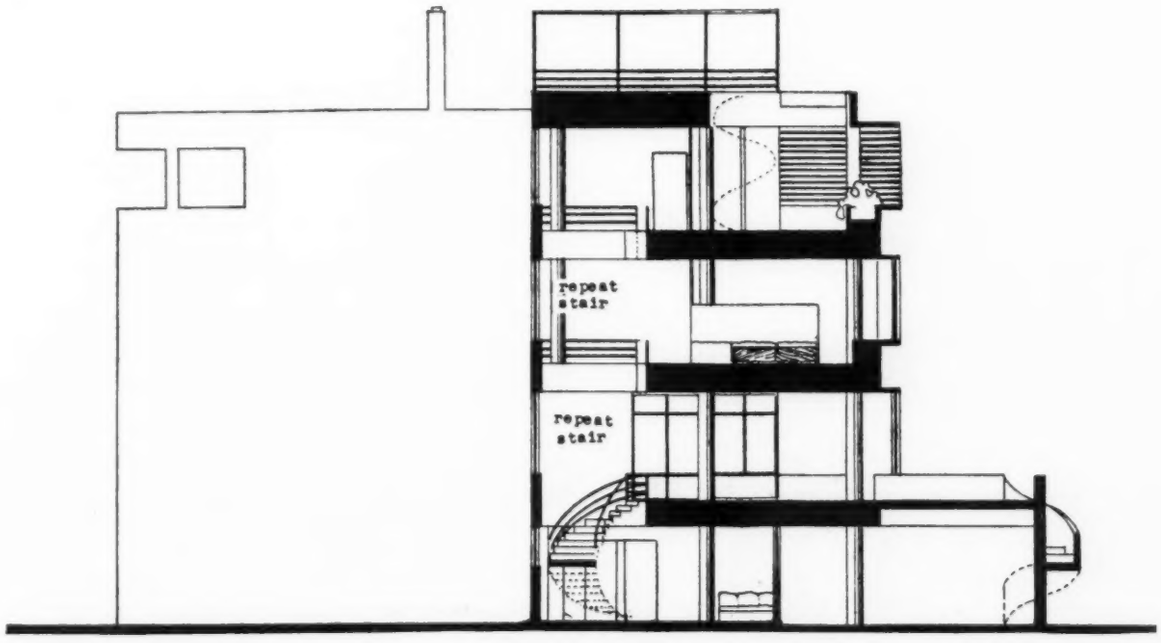
South Elevation



Longitudinal Section



East Elevation

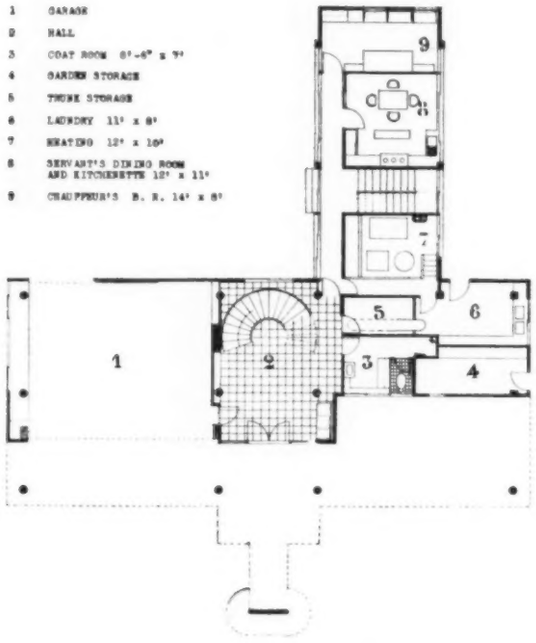


Transverse Section

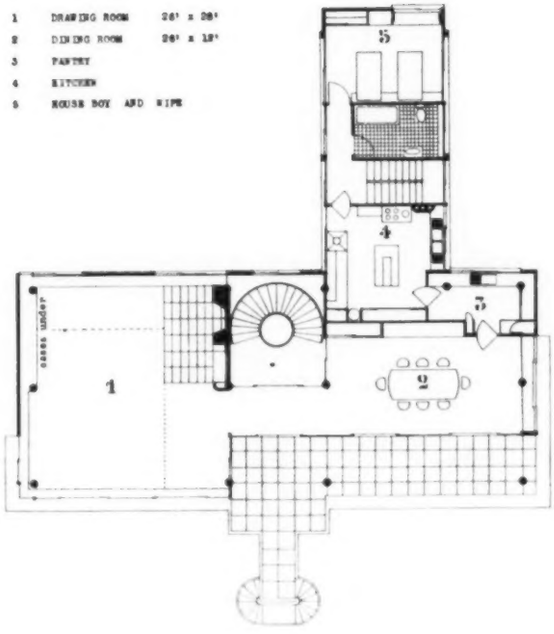
Shanghai has a hot and dampish climate, a fact which is considered in the structural design of this house. The windows extend out from the walls in wide overhangs so as to accommodate the wide-bladed Venetian blinds which subdue the hot rays of the sun, the sliding sash (described on page 53) and the continuous fixed mosquito screen on the outside.

WORKING DRAWINGS BY ANTONIN RAYMOND

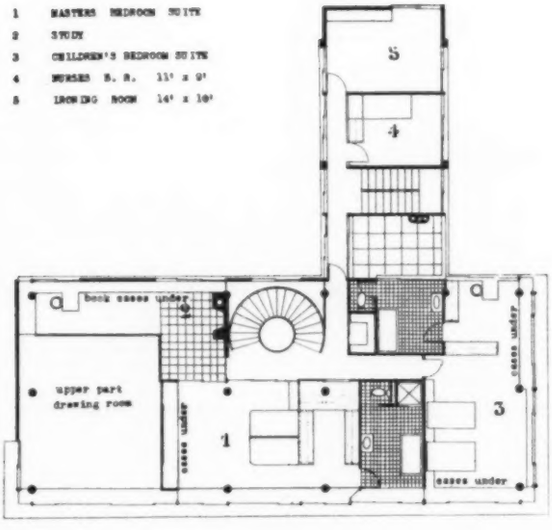
FLOOR PLANS OF A TOWN RESIDENCE IN SHANGHAI


1 GARAGE
2 HALL
3 COAT ROOM 8'-6" x 7'
4 GARDEN STORAGE
5 TRUNK STORAGE
6 LAUNDRY 11' x 8'
7 HEATING 12' x 10'
8 SERVANT'S DINING ROOM AND KITCHENETTE 12' x 11'
9 CHAUFFEUR'S B. R. 14' x 8'

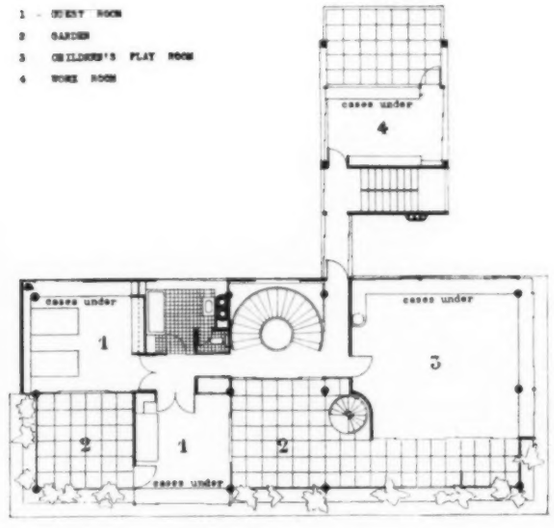
Ground Floor Plan



First Floor Plan


1 MASTERS BEDROOM SUITE
2 STUDY
3 CHILDREN'S BEDROOM SUITE
4 NURSES B. R. 11' x 9'
5 IRONING ROOM 14' x 10'
book cases under
upper part drawing room
cases under

Second Floor Plan



Third Floor Plan

ARCHITECTURAL CONCRETE AND ITS USE

By W. F. LOCKHARDT, Portland Cement Association

With architectural concrete, the designer is freed of the limitations of scale imposed by the commercially practicable sizes of structural units with which he must work. He can think of the entire structure as a compositional unit rather than as an assemblage of relatively small structural blocks.

Because of its flexibility, a narrowly defined technique for architectural concrete is not likely. Such technique as there may be can, however, be analyzed as a compound of several factors: technological, structural, architectural.

TECHNOLOGICAL FACTORS

Under this heading is included all that has to do with the making of good concrete—in the mixer and in the forms. Fortunately, the research which developed the water-cement ratio law of concrete strength has measurably simplified this work. For those readers who may wish to have this law restated, it runs thus:

"For plastic mixtures, using sound and clean aggregates, the strength and other desirable properties of concrete under given job conditions are governed by the net quantity of mixing water used per sack of cement.

"Designing a concrete mix, therefore, consists in selecting the water-cement ratio which will produce concrete of the desired resistance to exposure and the required strength, and finding the most suitable combination of aggregates which will give the necessary workability when mixed with cement and water in this ratio."

With this law, it is possible to set up a table of recommended water-cement ratios for concrete to meet different conditions of exposure. This is given in Table 1.

The design of a concrete mix can usually be accomplished most directly by starting with the proportions of cement and water indicated by Table 1 as being suitable for the specific exposure and then adjusting the quantity and proportions of fine and coarse aggregates until the desired character of concrete is obtained. Trial mixtures for various water-cement ratios are given in Table 2.

These trial mixtures will serve as a convenient start; if a more plastic mix is desired, the fines may be increased and the coarse aggregate curtailed. If the concrete turns out to be too dry, do not add more water (as this would obviously destroy the water-cement ratio) but reduce the quantity of aggregate in the next trial batch. If the mix is too wet, it may be made less fluid by increasing the fine and coarse aggregates in the proportions which have been found to give the desired plasticity.

In determining the water-cement ratio, it must be remembered that aggregates are always damp and therefore carry with them into the mixer a measurable amount of water, for which allowance should be made and subtracted accordingly from the amount of water to be added at the mixer. Table 3 gives a rough approximation of the quantity of surface water carried by average aggregates.* The water should be satisfactory—"suitable for drinking" is a good criterion—and the aggregates clean and structurally sound; weak, friable or laminated materials are undesirable.

Before pouring any concrete, all débris and ice should

*The subject of the Design and Control of Concrete Mixes is covered in booklet T-12, published by the Portland Cement Association, Chicago, which may be had free of charge.

TABLE 1 RECOMMENDED WATER-CEMENT RATIOS FOR CONCRETE TO MEET DIFFERENT DEGREES OF EXPOSURE

These requirements are predicated on the use of concrete mixtures in which the cement meets the present standard specifications of the A.S.T.M. and to which an early curing is given that will be equivalent to that obtained when protected from the loss of moisture for at least 7 days at a temperature of 70 degrees Fahrenheit. For curing conditions less favorable than this, correspondingly lower water-cement ratios should be used. The values are also based on the assumption that the concrete is of such consistency and is so placed that the space between the aggregate particles is completely filled with cement paste of the given water ratio.

EXPOSURE	CLASS OF STRUCTURE	WATER-CEMENT RATIO, U. S. GAL. PER SACK[1]		
		Reinforced piles, thin walls, light structural members, exterior columns and beams in buildings	Reinforced reservoirs, water tanks, pressure pipes, sewers, canal linings, dams of thin sections	Heavy walls, piers, foundations, dams of heavy sections
EXTREME	1. In severe climates (northern U. S.), exposure to alternate wetting and drying, freezing and thawing, as at the water line in hydraulic structures. 2. Exposures to sea and strong sulphate waters in both severe and moderate climates.	5½	5½	6
SEVERE	3. In severe climates (northern U. S.), exposure to rain and snow, and freezing and thawing, but not continuously in contact with water. 4. In moderate climates (southern U. S.), exposure to alternate wetting and drying, as at water line in hydraulic structures.	6	6	6¾
MODERATE	5. In climates (southern U. S.), exposure to ordinary weather, but not continuously in contact with water. 6. Concrete completely submerged, but protected from freezing.	6¾	6	7½
PROTECTED	7. Ordinary inclosed structural members; concrete below the ground and not subject to action of corrosive groundwaters or freezing and thawing.	7½	6	8¼

[1]Surface water or moisture carried by the aggregate must be included as part of the mixing water.

be removed from places to be filled and the forms oiled. If the preceding fill has been too wet, and a layer of slick mud-like laitance has formed on its surface, this should be carefully and thoroughly removed before fresh concrete is placed.

Concrete should be deposited at numerous points in the forms, rather than at one spot from which it will be expected to flow (perhaps aided by puddling) to distant points. Attempts to make the concrete flow long distances after depositing will cause the water and fines to segregate from the rest of the mass, resulting in long diagonal lines across the face of the structure following the top of the various slopes thus formed.

Where ornamentation of any kind is built into the forms, it is necessary to deposit the concrete so that it will not splash up into, and encrust, the ornamental molds before the concrete level has reached them. A vertical pipe or canvas chute, usually called an "elephant trunk,"

TABLE 2 TRIAL MIXTURES FOR VARIOUS WATER-CEMENT RATIOS

Indicated water-cement ratios in Table 2 include moisture contained in the aggregate.

Proportions are given by volume, aggregate dry and compact. Thus 1-2-3½ indicates 1 volume of cement, 2 volumes of sand and 3½ volumes of coarse aggregate.

If the aggregates are to be measured in the damp and loose condition they will occupy greater volume than when dry and compact. Amount should be determined by test. Approximate average value for sand 20 per cent, for coarse aggregate 6 per cent.

For approximate proportions by weight add 15 per cent to proportions of aggregate shown in the table.

The mixes are given as a guide only. The first batch should be made with measured water content and the proportions thereafter adjusted to give the desired workability, maintaining the specified water-cement ratio.

SLUMP INCHES	TRIAL MIX, DRY COMPACT VOLUMES FOR MAXIMUM SIZE OF AGGREGATE INDICATED	
	1 INCH	2 INCH
	Water-Cement Ratio 5½ Gallons per Sack	
½-1	1-2-3	1-2-3½
3-4	1-1¾-2½	1-1¾-3
5-7	1-1½-2	1-1½-2½
	Water-Cement Ratio 6 Gallons per Sack	
½-1	1-2¼-3¼	1-2¼-4
3-4	1-2-3	1-2-3½
5-7	1-1¾-2½	1-1¾-3
	Water-Cement Ratio 6¾ Gallons per Sack	
½-1	1-2½-3½	1-2½-4
3-4	1-2¼-3¼	1-2¼-3¾
5-7	1-2-3	1-2-3½
	Water-Cement Ratio 7½ Gallons per Sack	
½-1	1-3-4	1-3-4¾
3-4	1-2½-3¾	1-2½-4¼
5-7	1-2¼-3½	1-2¼-3¾

TABLE 3 APPROXIMATE QUANTITY OF SURFACE WATER CARRIED BY AVERAGE AGGREGATES*

Very wet sand	¾ to 1 gal. per cu. ft.
Moderately wet sand	about ½ gal. per cu. ft.
Moist sand	about ¼ gal. per cu. ft.
Moist gravel or crushed rock	about ¼ gal. per cu. ft.

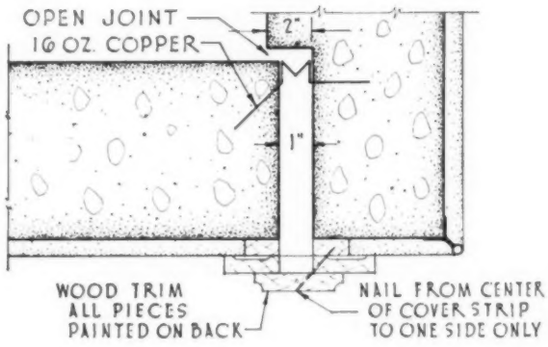
*The coarser the aggregate, the less free water it will carry.

can be used to deposit the concrete, the lower end of the pipe being kept almost at the surface of the concrete to avoid splashing.

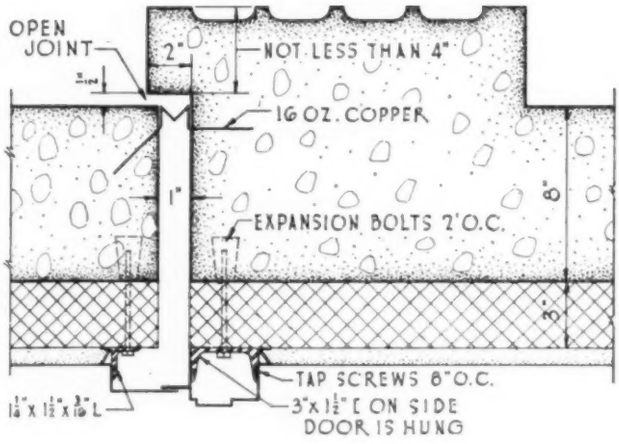
It is desirable to plan, wherever possible, to stop the concrete pour at some horizontal element in the design, such as a molding or belt course. The forms should be slightly over-filled and after the concrete has settled, the water which rises to the top can be struck off, leaving clean sound concrete ready for the next fill. It is obvious that care should be taken to see that these joints are straight and true to avoid unsightly irregular lines after the forms have been removed.

Before starting the next fill, the concrete should first be wetted and then an inch or two of mortar placed in the forms to avoid any possible honeycomb at the juncture of the old and new concrete. Some engineers find it satisfactory to reduce the coarse aggregate by half in the first batches. Either method is permissible.

EXPANSION JOINTS

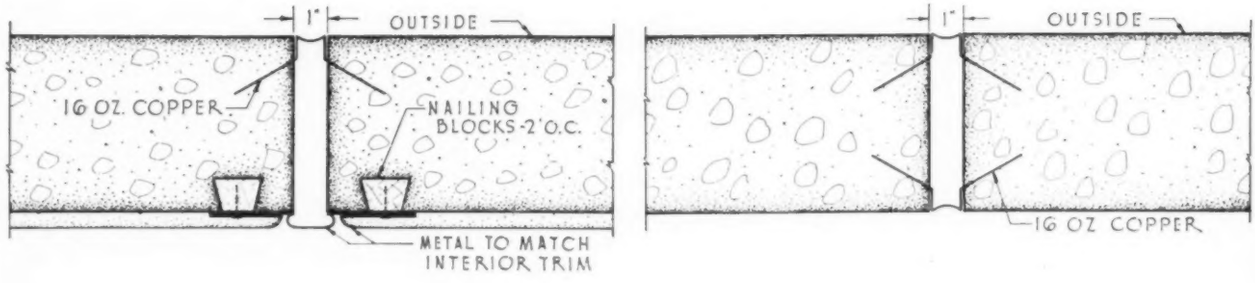


A CONCEALED CORNER JOINT



WALL JOINT AT PILASTER
FURRED AND PLASTERED INTERIOR WITH
EXPANDING DOOR BUCK AND FRAME

Structural details recommended by Portland Cement Association



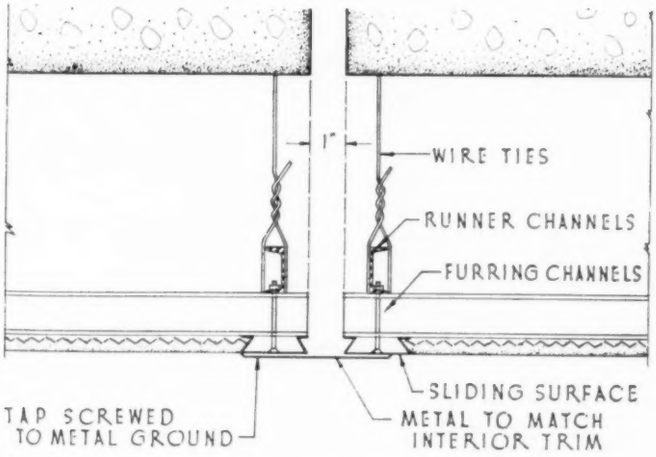
TWO METHODS OF PROTECTING EXPOSED JOINTS

STRUCTURAL DESIGN

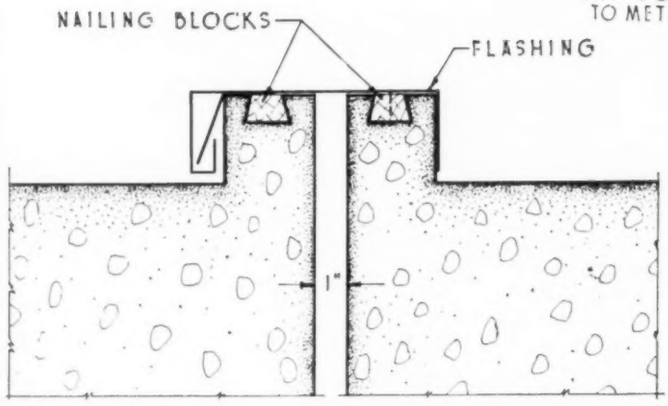
Under this caption may be grouped matters of engineering. There are many different methods of reinforced concrete floor construction from which the designing engineer can select the one best suited to architectural needs. This applies also to column construction and reinforcement. The whole subject is one of collaboration between the architect and his structural engineer in solving specific problems. There is little that can be said here, and that mostly on the matter of expansion joints.

Most buildings of ordinary size and fairly regular plan do not need expansion joints, but with some conditions of size and plan it is well to provide them. Buildings under 200 feet long are seldom provided with joints; longer buildings should have at least one. In general the joints should not be more than 200 feet apart. If the plan has a large interior court, a bank of large elevators,

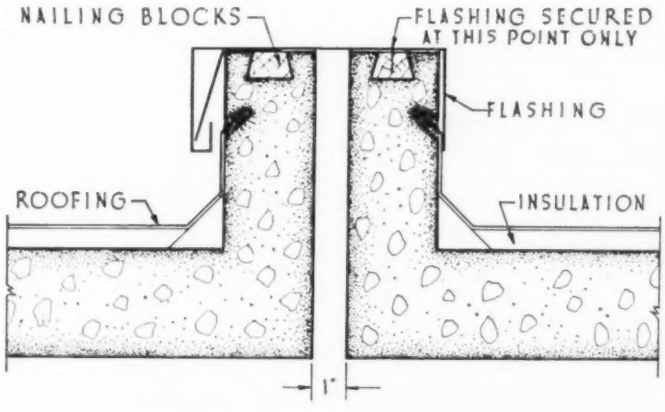
EXPANSION JOINTS



JOINT IN SUSPENDED CEILING
BENEATH CONCRETE FLOOR



COPING JOINT



ROOF JOINT
DISCONTINUOUS MEMBRANE ROOFING

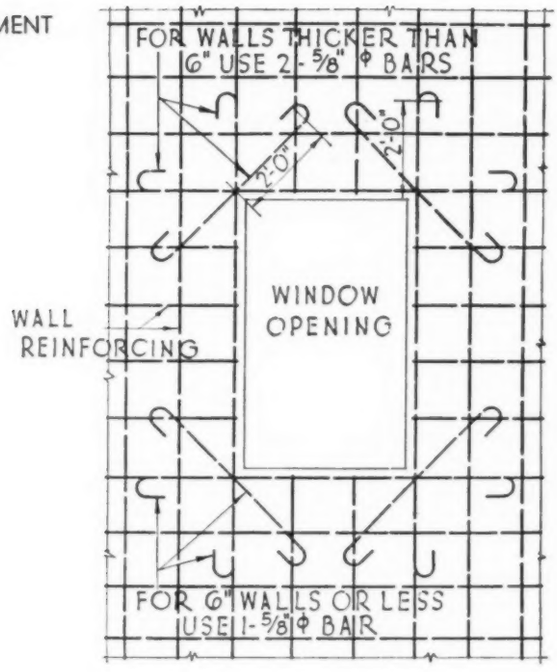
Structural details recommended by Portland Cement Association

or the like, joints at one or both ends of the vulnerable section may be in order. Where a building changes direction, as in L-, T-, or U-shaped plans, joints are generally advisable. Suggested expansion joints are shown in the accompanying illustrations.

Adequate reinforcement should be provided around window openings to avoid the fine radial cracks sometimes found where this precaution is neglected. Recommended practice is shown in the diagram on the next page.

To localize in a predetermined suitable plane any cracks that might tend to form, some engineers advise filling the forms to either the sill or window head, and letting the concrete stand for several hours, or overnight, before concreting is resumed. Any strains which might otherwise result in a crack will then tend to follow the fill plane, and remain practically invisible.

TYPICAL REINFORCEMENT
AROUND WINDOWS



ARCHITECTURAL FEATURES

Various characteristics may be impressed on the finished wall by the methods of form construction. The type and kind of finish will depend on the architect's imagination and his repertory of form construction materials.

Board marks can be minimized or emphasized by proper choice of lumber. Board-joints can be reduced in number by the use of wider boards, or increased by the use of narrower pieces. The joint can be emphasized still more by chamfering lightly the edges of the boards, which will result in a raised triangular fillet at each joint.

Smooth surfaces can be obtained by lining the forms with plywood or Presdwood, using fine nails having thin flat heads which do not leave an impression on the finished concrete.

Corrugated black iron has been used with success for limited wall areas and for pilaster fluting. (Black iron will not adhere to the concrete; galvanized iron will do so even if oiled.)

Half-rounds tacked to the forms to leave flutes in the concrete surface, strips to form rustication, and the like, are best nailed so lightly that when the forms are removed, the strips will remain in the concrete, thus protecting the still-tender arrises. It is also wise to make one or two longitudinal saw-cuts on the backs of such pieces before nailing to the forms; if the wood has partly dried out, it will expand when the wet concrete is placed against it, and the saw-cuts will provide room for this expansion, which might otherwise damage fine edges.

If the design involves small members or fine detail it is well to avoid construction in wood, even where possible, in order to lessen the likelihood of damage by swelling. For such cases, and where elaborate ornamentation is desired, waste plaster molds are employed.

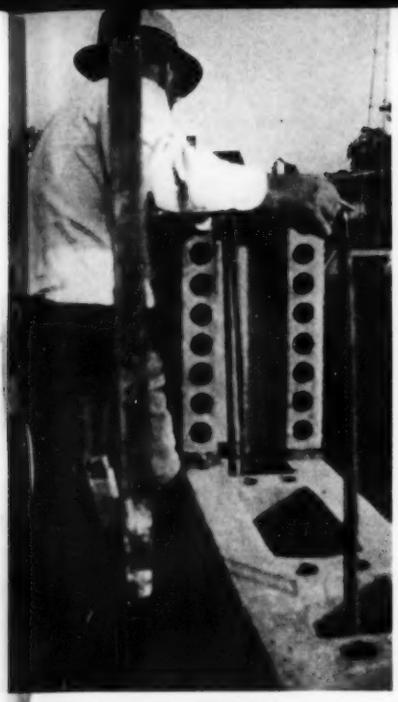
From the original clay model, a plaster mold is made. In this, after the clay has been removed, a glue reproduction of the original model is cast. From this, in turn, as many plaster molds can be made as required by the design. It follows that the more times a given piece of ornament can be used the less will be the cost.

In making waste molds (so called because they are "wasted" or destroyed in removing them from the concrete), it is usual to place a layer of colored plaster (⅛" or ¼" thick) next to the concrete so that the workman who is chipping away the plaster will know when he is about to reach the concrete and so will take precautions.

In regions of scanty rainfall, drip moldings are not of great importance, but in other parts of the country where there is normal precipitation, especially in the industrial regions, they are worth careful consideration. Adequate provision for drips on the underside of sills, belt courses, copings, cornices, and so on, will prevent accumulated soot from being washed in unsightly streaks down the face of the structure.

Cornices can sometimes be drained to the rear, and water discharged through vents in the base of the parapet onto the roof proper, to be handled by the roof drainage system. It is also feasible to slope the top of the parapet wall to the back, if it is desirable to avoid the front overhang which a drip would require.

Lest these notes appear to indicate unusual difficulties in architectural concrete, it should be remembered that the suggestions embrace nearly the whole field of details to which thought must be given. They can well be contrasted with the complicated technique of construction in which the walls are assemblages of various materials unrelated in size, composition and behavior, with consequent necessity for intricate spandrel waterproofings and flashings. Joints through which moisture could conceivably enter the structure are reduced from vast numbers to three or four, or, at the most, not over a dozen on the largest buildings. The hazards of leaky sills and the maintenance of exposed metal lintels and spandrels are avoided, together with the technical problems involved in their satisfactory installation.



1

PRECAST CONCRETE BLOCK CONSTRUCTION

BLOCK DESIGNED BY ERNST A. BENKERT OF BENKERT & MITTELBUSHER, ARCHITECTS
WINNETKA, ILLINOIS **MANUFACTURER: NEIL GATES**

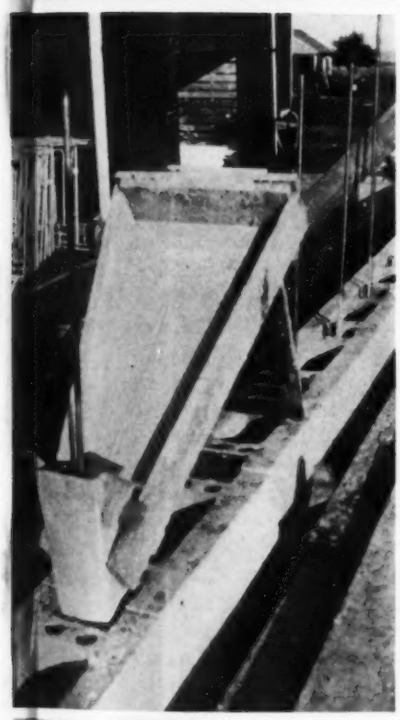
UNIT: 2′-0″ x 1′6″ x 8″. Materials: cement, sand, Zonolite, asbestos, water.

METHOD OF MANUFACTURE: Mix is poured into molds containing vertical and horizontal rubber tubing which are inflated when mold is filled. This pressure displaces a large amount of water, sets mix: block may be removed almost immediately.

METHOD OF CONSTRUCTION: Units are laid directly on footings and/or floor slab, with a constant vertical and horizontal joint (Figure 3), using either cement mortar or mastic as bond. The vertical joint coincides with steel reinforcing bars sunk in footings; the joint, when poured, gives a concrete stud 2′ on centers (Figure 2). Various types of floor construction may be used but the designer suggests system indicated below. Precast hollow tiles, 2′ square, are placed on a temporary form; these serve as formwork for poured joists, appropriately reinforced, 2′ on centers each way. Center section of each tile may then be filled with insulation—against sound between floors or against heat loss under the roof. This method serves as a foundation for any type of floor or roof finish. Recommended for the floor is a precast floor tile of proper size to center joints on poured joist.

ADVANTAGES: Unit carries own insulation in form of cells (Figure 1) and Zonolite and asbestos aggregates; center air space suitable for heating, plumbing and lighting conduits; finished block allows for nail and sawing, serves as natural plaster base; walls may be only spray-painted inside and out, plaster omitted; surface susceptible to sculptural treatment; unit may be handled easily by one man.

DISADVANTAGES: Because of bond with joist, units cannot be removed after building is finished; use of poured concrete definitely limits time of year during which construction can be properly undertaken; not suitable for traditional styles, since economies of wall construction tend to disappear in pitched roofs, ornament, etc.



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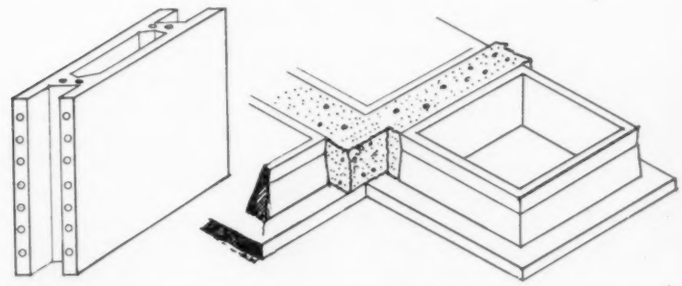
3



TYPICAL WALL UNIT DETAIL FLOOR CONSTRUCTION

NEWS OF THE MONTH

GOVERNMENT UNDERTAKES CENSUS OF CONSTRUCTION

Authoritative studies show that the durable goods industries are the ones that encounter the greatest difficulty in a period of economic stress. Because construction is one of the largest industries in this group, widespread interest is being displayed in the Construction Census that is to be taken by the Bureau of the Census as part of the Census of Business. It is designed to secure the basic facts for construction activities; the contribution that will thus be made to the knowledge of construction will be an important step towards stabilizing conditions in this industry.

On January 2 representatives of the Bureau of the Census begin calling upon contractors to request information that is needed. Figures will be secured for the number of persons employed by contractors, man-hours of work in 1935, disbursements for salaries and wages, value of contracts and orders received during 1935, value of construction work performed, and expenditures for materials. In addition, information is to be obtained for the location of the business establishments that are regularly maintained by contractors, the legal form of organization (firm or corporation), and the kind of construction business in which they were engaged during 1935.

At the request of some of the leading members of the construction industry who have assisted in planning the Census, detailed information is to be secured for some items. Work performed, for example, will be shown separately for one- and two-family houses, other residential building and non-residential building, heavy construction and highways. Each of these groups will be further subdivided by new construction and by remodeling, repairs and maintenance. Private construction and public construction are also to be shown separately. These breakdowns will make a detailed analysis of the industry possible.

Construction activities are directed toward providing and maintaining the facilities required for production and the structures needed for housing. In normal times a large proportion of workers are employed directly in these activities. Many additional workers are engaged in the manufacture of the materials used in construction. The total of constructional and related manufacturing operations therefore results in very large disbursements for wages. With many industries dependent upon construction for markets for their products, it is evident that the degree of construction activity has a marked effect upon general business conditions. Because of this last consideration, the information to be secured by the Census will be of great value to those concerned with the analysis of the business situation.

It is not to be inferred that statistical facts are lacking for the construction industry. A number of different agencies are compiling statistics currently. Without such data very little would be known about the changes that take place in construction activities. The current statistics, however, are based on reports from varying proportions of the total number of contractors. The Census, on the other hand, will secure reports from all contracting establishments and will thus furnish a background for increasing the usefulness of the current statistics.

The Census figures will be secured by trained field men of the Bureau of the Census who will explain the report forms and assist the contractors in filling them out. Every effort will be made to complete the field canvass in three months. This will make it possible to issue the first results by July.

Headquarters for the Census of Business have been established in Philadelphia with Fred A. Gosnell, Chief Statistician, in charge. Only sworn employees of the Bureau of the Census are permitted to examine the individual reports and then only for the purpose of compiling statistics. No access to information furnished is permitted under the law, not even to other Governmental agencies, and no information will be disclosed which would reveal any of the facts or figures in the individual reports.

GEORGE J. LAWRENCE, *Chief*
Construction Division, Census of Business.

PURDUE BEGINS HOUSING EXPERIMENTS

Research in housing is actively under way by the Housing Research Foundation at Purdue University. Houses costing less than $5,000 are being built and studied with the object of finding a way to meet the demand for an adequate low-cost house for the average American family.

Through the generosity of David E. Ross, 143 acres of land have been donated to the Foundation for the purpose of a Housing Research Campus. Upon this campus will be built a community group of homes which can serve as a cross-section of average American housing adjusted to contemporary conditions. These houses will become the object of research to determine why houses cost what they do, how costs can be reduced, and low-cost housing can be improved in plan, construction, equipment.

Under the direction of Mr. Frank Watson the first group of nine houses is now under way. Contracts for three houses have been let and construction started. Roads have been rough-graded. A sewage disposal plant of 50 families capacity is under construction. Water will be supplied from a deep well which is completed. Trenches are now being dug for the gas, water and sewer lines. A feature of the development will be the use of underground electric service throughout the property.

The first house in the development was designed by Howard T. Fisher, Chicago architect, and is being erected by General Houses, Inc., at a cost of $4,236. It is a cellarless, one-story house with detached garage, built with a new system of prefabricated units used for the first time in this house. These units are a modification of a built-up plywood unit recently developed and tested at the United States Forest Products Laboratory. The living accommodations include a combination living and dining room, kitchen, utility and storage room, three bedrooms and bath.

The design of the second house was awarded the first prize in a competition conducted by the New York Chapter, American Institute of Architects. The architect is

J. André Fouilhoux, New York City. The contractor is Ed Schroyer, Lafayette, Indiana. The cost of this house exclusive of the land, will be $4,681. This is also a cellarless house, but unlike the first will have two stories and built-in garage. It will be of wood frame construction, finished with stucco on the exterior and plywood on the interior. The living and dining rooms are combined as are the kitchen and heater rooms on the first floor. The second floor contains three bedrooms and an unusual feature for a small house in the form of separate toilet and bathrooms.

Reinforced concrete was selected for the construction of the third house which was designed by Burnham Brothers and Hammond, Inc., Chicago architects. It will cost $4,997 and the contractor is Charles Gambsky Co., Inc., Menasha, Wisconsin. In contrast to the other two houses, this will have a basement containing laundry, heater and recreation room. The first floor provides for a combination living-dining room, kitchen and garage; the second floor, three bedrooms and one bath.

Six additional houses which will complete the first research unit are now in the final design stage. They will be built of wood, brick, steel, Haydite block, and Rostone, and will conform to the general specifications established for the entire group.

Since the project is being undertaken for research study it was viewed as essential that as many different building materials and construction methods as possible should be utilized. For purposes of comparison it also appeared essential to have the design for all houses based upon requirements common to all. The designing specifications consider three factors; first, a house to cost less than $5,000 exclusive of the land; second, accommodations for a family of two adults, two children—a boy and a girl; and that each house must contain some distinctive feature.

To make the results of the Housing Research Project of practical value, it is being removed from the realm of research as typified by the scientific laboratory. In other words, the procedure followed in the designing and erection of these houses is exactly that which would be followed by the average citizen who sets out to build himself a house. The problem is placed in the hands of an architect, bids are obtained from contractors, materials are those normally available in any locality, labor is of the type and quality normally used on construction work. No advantage is taken by the Purdue Research Foundation in the matter of obtaining materials or equipment at a discount or free from manufacturers or producers.

The site of the Housing Research Campus is free from building code restrictions. Thus unrestricted the project is free to adopt construction methods and details which might not otherwise be permitted and still erect safe, substantial houses.

After these houses are completed, they will continue to be the object of research. An attempt will be made to furnish them adequately and in good taste at a cost in proportion to the cost of the house. The houses will be lived in by members of the scientific staff of Purdue University who will pay a minimum rental. Records will be kept of the maintenance costs, water, gas and electric consumption, heating costs, performance of the equipment, structural soundness, and home arrangement.

BENJAMIN F. BETTS.

A. I. A. REPORTS SCARCITY OF DRAFTSMEN

Improved conditions in the construction industry are reported from all sections of the United States by the Regional Directors of the American Institute of Architects, according to a survey of progress in architecture and building during 1935 by Stephen F. Voorhees, president of the Institute.

A marked increase in architectural employment, amounting in some localities to an actual scarcity of draftsmen, is a significant feature of the recovery in this industry.

The Institute Directors urge that governmental participation in the field of low-rental housing be limited to procuring and disseminating necessary general information and to furnishing financial aid for such projects, leaving to local agencies such functions as location, design, construction, and administration.

"One of the most encouraging experiences of the past year," Mr. Voorhees states, "has been the higher rating attained by plans prepared by architects when submitted for government insured mortgages as compared with plans prepared without benefit of architectural service.

"To further this work the Directors of the American Institute of Architects indorsed a plan to establish local groups of architects prepared to furnish architectural service in the small house field in a manner to meet local opportunities and demands for such professional service.

"The Directors also tendered to Government agencies promoting better small house building the assistance of the Institute in raising the standards of value by means of the employment of competent architectural service."

A. I. A. CONVENTION AT WILLIAMSBURG

The Directors of The American Institute of Architects have adopted the recommendation of the Convention Committee that the 68th Convention be held May 5 to 8 at Williamsburg, Va.

It is proposed to establish Convention headquarters at Old Point Comfort, 38 miles away, where hotel accommodations suitable for the Institute's requirements can be had. Sessions will be held there and at Williamsburg; automobile busses will be used for transportation between the two points.

AIR HYGIENE FOUNDATION OF AMERICA, INC.

An organization bearing this name has been formed by a large group representing various industries, with headquarters in Pittsburgh. It is intended to conduct investigations of and to stimulate research on problems in the field of air hygiene and to gather and disseminate factual information relating thereto. It will also cooperate with and assist other agencies active in this field and will collaborate in the coordination of such research efforts. A comprehensive investigation has been begun at Mellon Institute of Industrial Research, Pittsburgh, under support of Air Hygiene Foundation of America, in which the hygienic, technologic, and economic aspects of air contamination, especially by dust in the industries, will be studied. H. B. Meller, who has been appointed managing director of Air Hygiene Foundation of America, will head this investigation at Mellon Institute. Mr. Meller is coauthor with L. B. Sisson of an article, "Air Pollution," which appeared in the March 1934 issue of *The Record*.

Editorial in the Richmond (Va.)
NEWS LEADER, *December 16, 1935*

FAN MAIL ON WILLIAMSBURG

The December issue, which was devoted entirely to a presentation of the Restoration of Colonial Williamsburg in Virginia (a project executed with funds given by John D. Rockefeller, Jr.), has evoked much reader-interest, as shown by the increase in congratulatory letters to the editors. Although an extra supply of copies of this issue was printed, the demand proved greater than had been anticipated and it has been found necessary to prepare a special reprint edition. These reprints, as suggested by Mr. Schwinley of Washington, D. C., whose letter appears below, have been bound in permanent board covers, finished in a blue cloth, and can be obtained from The Record's circulation department at $1 a copy; they are also available at the office of Colonial Williamsburg, Inc., in Williamsburg.

Merrill C. Lee, State Director of the Federal Housing Administration at Richmond, Va., in his letter to The Record calls attention to an editorial which appeared in the Richmond *News Leader* in praise of the F. S. Lincoln photographs. The editorial is reproduced herewith.

WILLIAMSBURG PUBLICITY.

Publicity for restored Williamsburg has been directed in the same spirit as the restoration itself—without the blare of bad taste or the boast of achievement. Whatever has been printed with the approval of the men responsible for the restoration has been issued in flawless form. The published pamphlets on the different buildings are admirable; RUTHERFORD GOODWIN'S *Brief and True Report for the Traveler Concerning Williamsburg, in Virginia*, is unique in spirit as in format. Pictorially, nothing could be finer than the photographs of Williamsburg, to which *The Architectural Record* devotes the whole of its December issue (Vol. 78, No. 6).

We had occasion to remark the other day, in reporting on German publicity for the Olympic games, that American cameramen must look to their laurels, because the Germans are doing some amazing things with new films and lenses. After examining the photographs of Williamsburg in the architects' magazine, we are quite sure Americans can defend their laurels. It is hard to see how photography could more perfectly reflect the spirit of an incomparable restoration.

I have just received the December issue of The Record, which I think presents the restoration of Colonial Williamsburg in a splendid manner, and I certainly wish to extend my congratulations on this excellent number.

J. BINFORD WALFORD,
Architect for the College of William and Mary

I cannot close this letter without expressing my great admiration of the Williamsburg issue. It was a beautiful job, and you are certainly to be congratulated.

T. R. GOODWIN,
Colonial Williamsburg, Inc.

Congratulations on a splendid issue.

W. DUNCAN LEE, *Architect*
Richmond, Va.

The issue is superb.

CHAS. I. BARBER,
Barber & McMurray, Architects
Knoxville, Tenn.

I have just received my December issue of your magazine and wish to tell you I think it worth much more than the price of a year's subscription. The photographs of Williamsburg are marvelous and it is quite a treat to look at so much beauty when "modernism," the cult of ugliness, is in vogue.

I am not an old "traditionalist"—in fact, I am a young man who wants intelligent progress in architecture—but it seems to me that architects are going considerably out of their way for something "new." This in turn seems to me to denote pure egotism.

B. J. ALLEN, JR.
Dania, Fla.

Please accept congratulations on the December issue which illustrates the restoration of Williamsburg.

R. V. ARNOLD, *Architect*
Bristol, Va.

Congratulations on your excellent December issue. Williamsburg is a fine Colonial monument, and your published treatment of it has been beautifully done.

C. E. SILLING,
Warne-Tucker-Silling, Architects
Charleston, W. Va.

I have just received my December number of The Architectural Record and find it *very* interesting in view of the Williamsburg material.

ARTHUR B. HEATON, *Architect*
Washington, D. C.

I have just received the December issue —it is a most unusual and valuable edition, both to architects and to others interested in architecture.

There are several persons to whom I should like to give copies of this issue. However, it occurs to me that it would be more satisfactory for one's private library if it were bound. Have you considered having an edition of this issue bound in boards for the trade?

KEITH SCHWINLEY, *Architect*
Washington, D. C.

Your December issue is a *total loss*. I thought I was taking an architectural magazine, not one on archaeology. If such things must be included, why not go 50-50 so there will be something of value?

ELBERT BROWN, *Architect*
Los Angeles

The presentation of the subject matter was beautifully handled; we all send our congratulations, and also think that Lincoln should be congratulated for his photography.

EARL G. VON STORCH,
Oakland Housing, Inc.
Walled Lake, Mich.

We think very highly of your presentation of the Williamsburg Restoration. Mr. Cret said he thought it better done than anything he had seen for some time.

JOHN F. HARBESON,
Office of Paul P. Cret
Philadelphia

As a student of architecture who is deeply interested in Colonial Architecture, I was delighted with the many fine photographs and excellent text in the December issue. Here's a vote for more on Williamsburg in the near future.

DAVID M. HOLLENBACH
Reading, Pa.

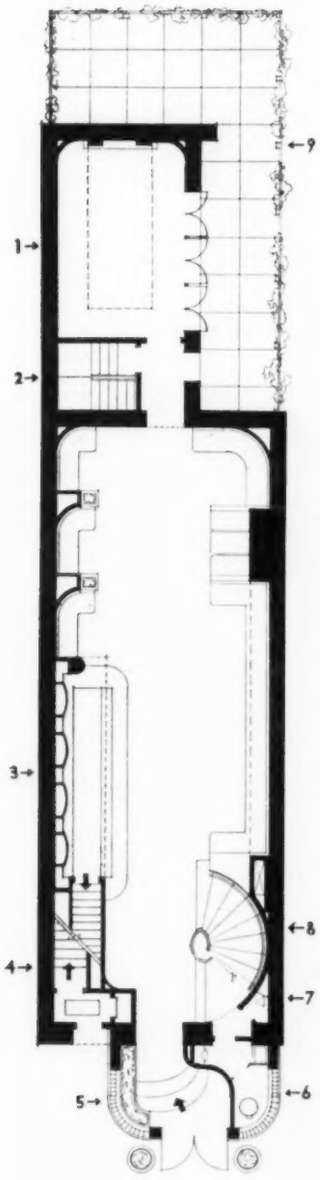
Your reproduction of Colonial and Georgian designs is second to none in the architectural field. Perry Shaw & Hepburn have done remarkable work in this restoration and I say, personally, that everybody's hat should come off to them.

ARTHUR A. HOEFLER, JR., *Designer*
Epple and Kahrs,
Architects and Engineers
Newark, N. J.

Congratulations! Your December issue is marvelous, and we have all enjoyed it tremendously. It is a very valuable addition to our Library.

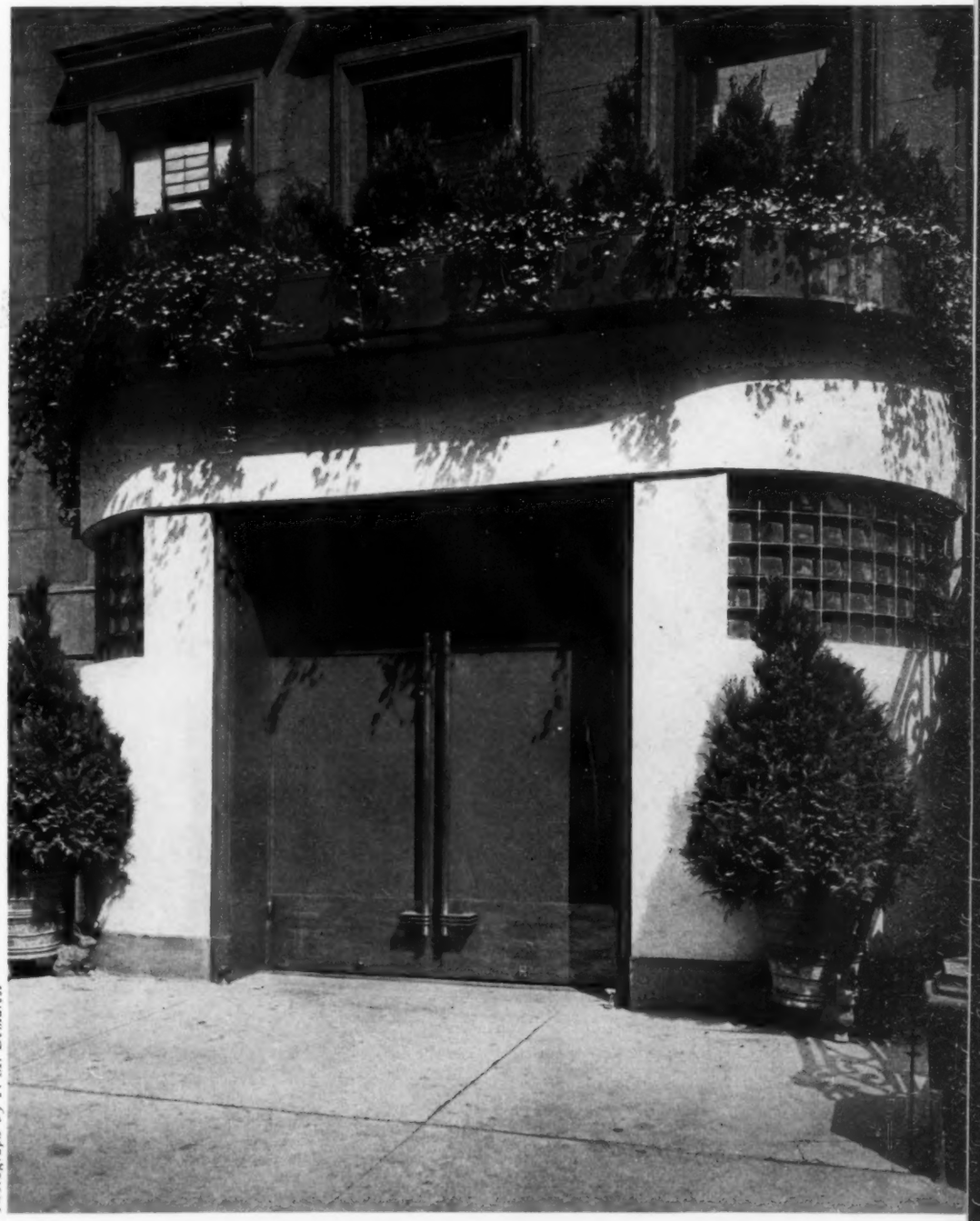
DANIEL PAUL HIGGINS,
Office of John Russell Pope
New York City

PORTFOLIO OF RESTAURANTS AND SHOPS



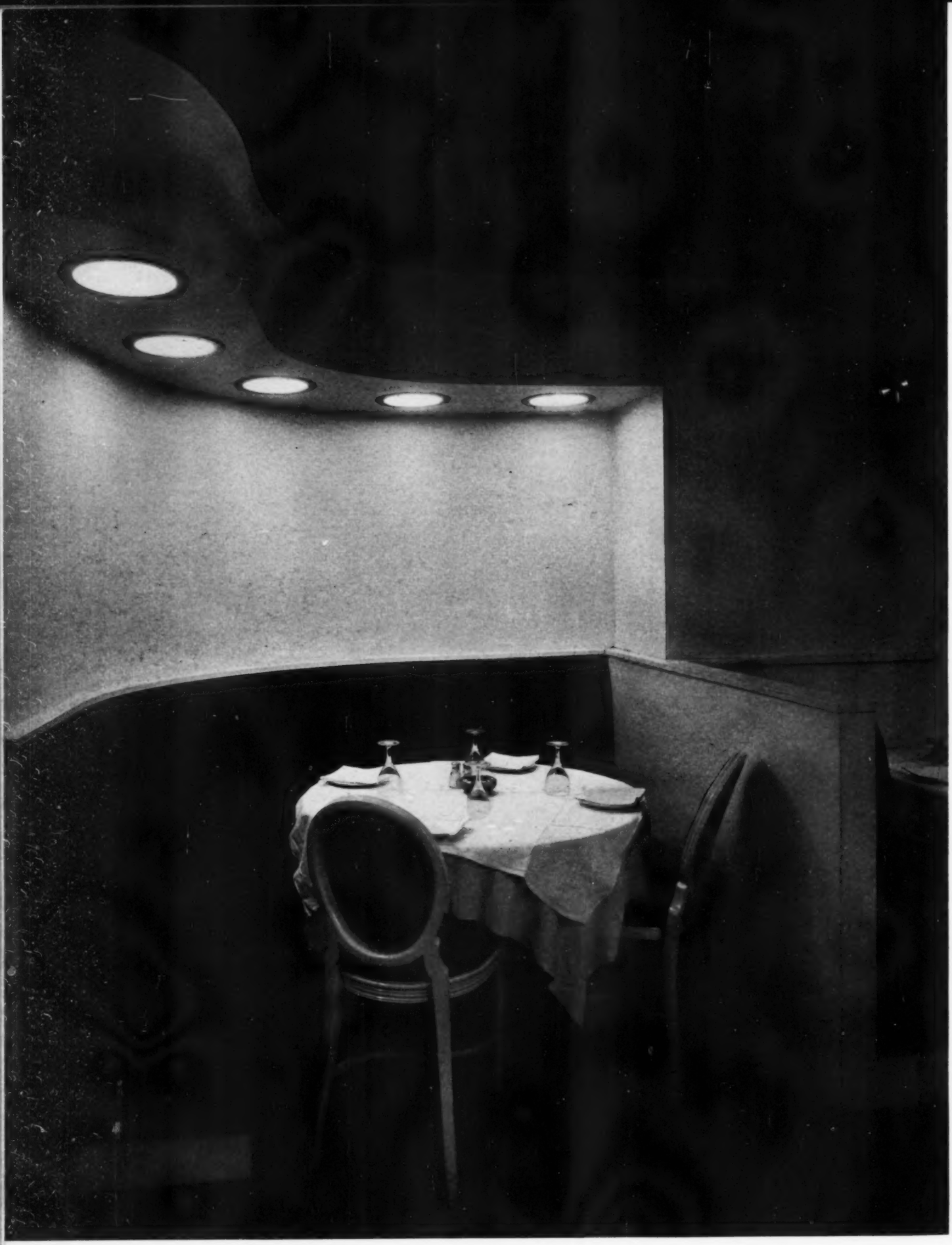
1. Private Dining Room
2. Service Stair
3. Bar
4. To Apartments
5. Plants
6. Men's Room
7. 'Phone
8. To Rest Rooms and Private Dining Room
9. Dining Terrace

TONY'S RESTAURANT - CHARLES SHILOWITZ, ARCHITECT



Photograph by F. M. Demarest

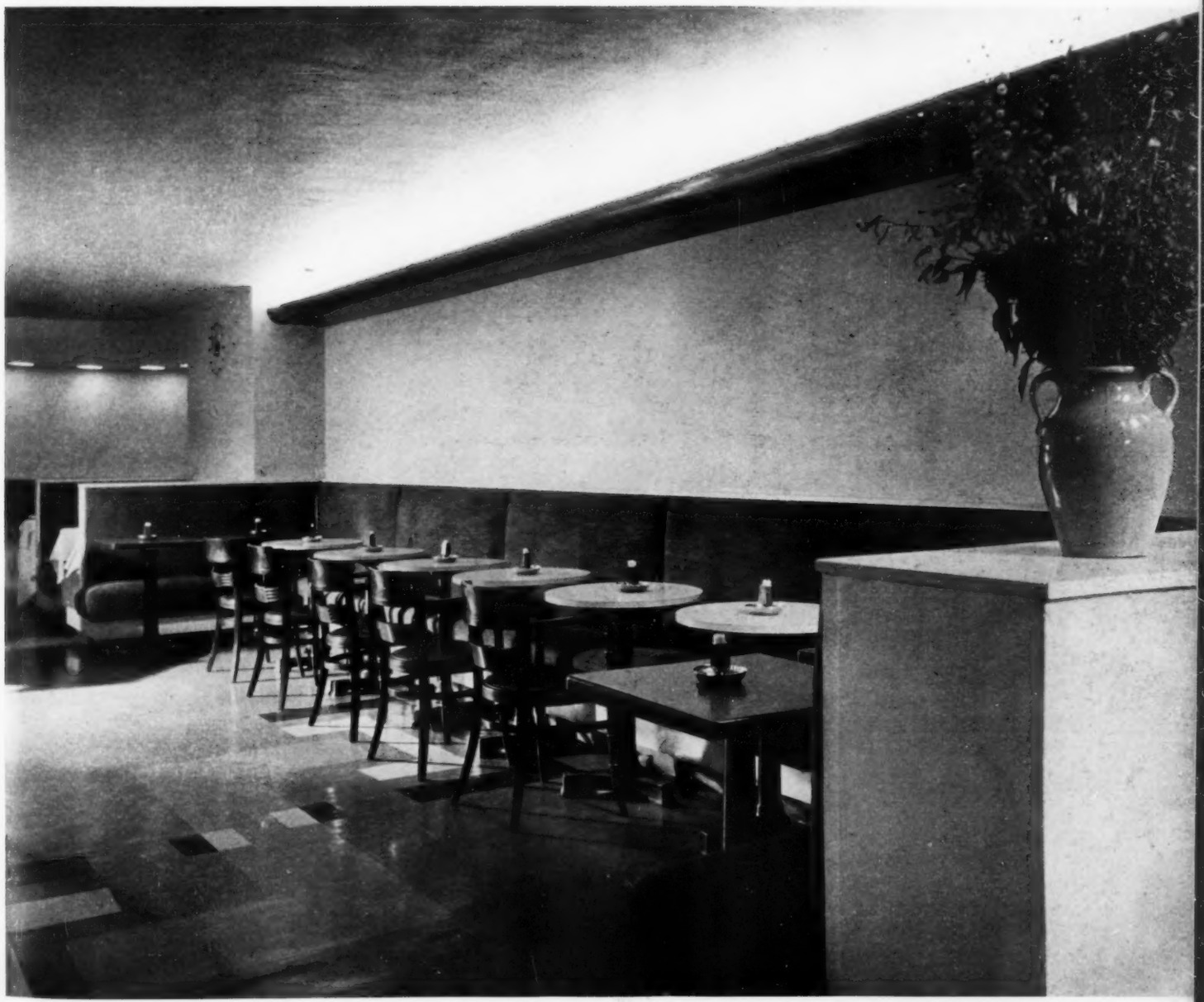
White stucco and black concrete base; glass brick; maroon doors.



INTERIOR OF TONY'S RESTAURANT CHARLES SHILOWITZ, ARCHITECT

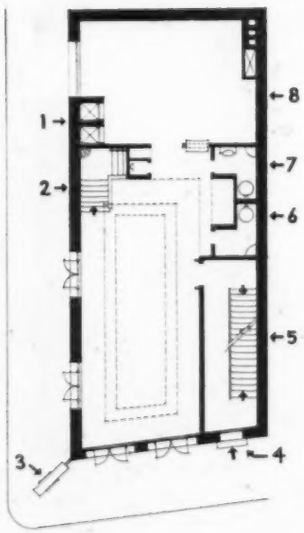
The plaster walls and ceilings are finished in a pale coral. The light trough is American walnut. The linoleum floor has a brown field with coral and black inlays. The upholstery is brown.

Photograph by F. M. Demarest

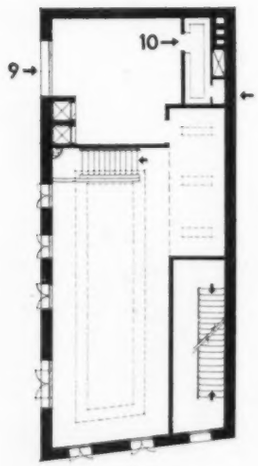


LEE'S RESTAURANT

CHINATOWN, NEW YORK CITY



Second Floor



Third Floor

The plaster ceiling is painted a pale olive. The walls are gray harewood. The linoleum floor has a black field with inlays of vermilion and white. Vermilion tapes emphasize the olive Venetian blinds. Lighting fixtures are glass and red copper.

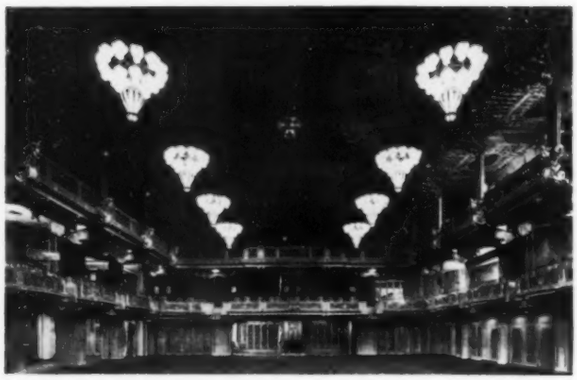
KEY TO PLAN

1. Dumb-waiter
2. To Upper Floor
3. Neon Sign
4. Entrance Below
5. Stair Hall
6. Women's Room
7. Men's Room
8. Kitchen
9. Kitchen
10. Supplies

Photographs by F. M. Demarest

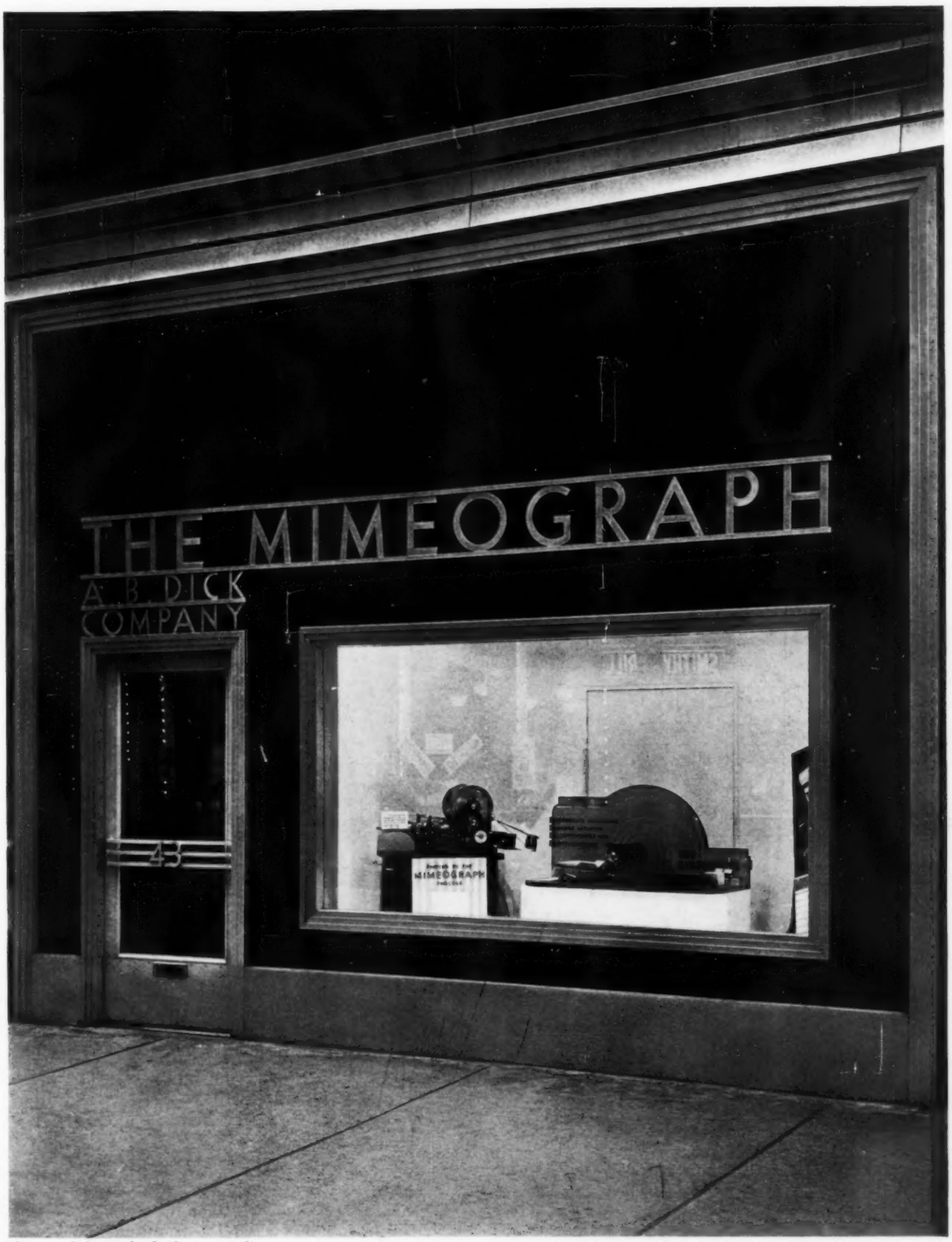
HOTEL BALLROOM TRANSFORMED INTO AUTOMOBILE DISPLAY SPACE

DESIGNED BY WALTER DORWIN TEAGUE



Within a span of 12 hours the rococo ballroom of the Hotel Astor in New York City was recently turned into a modern interior for the temporary display of the new Lincoln-Zephyrs. Plans for the transformation had been made in advance, so the changes were quickly executed. The piers shown in the photograph below are wood frames covered with stretched white cloth, the sides being accented in cobalt blue. The large pillars at the ends of the hall are a vermilion red. In place of a stretched false ceiling, strips of cloth are hung like louvers from the ceiling, making possible a system of indirect general lighting. Two bands of lighting troughs ran the length of the room, connecting the end pillars. The side piers are also illuminated.

Photograph by Wendell MacRae



Photograph by Hedrich-Blessing Studio

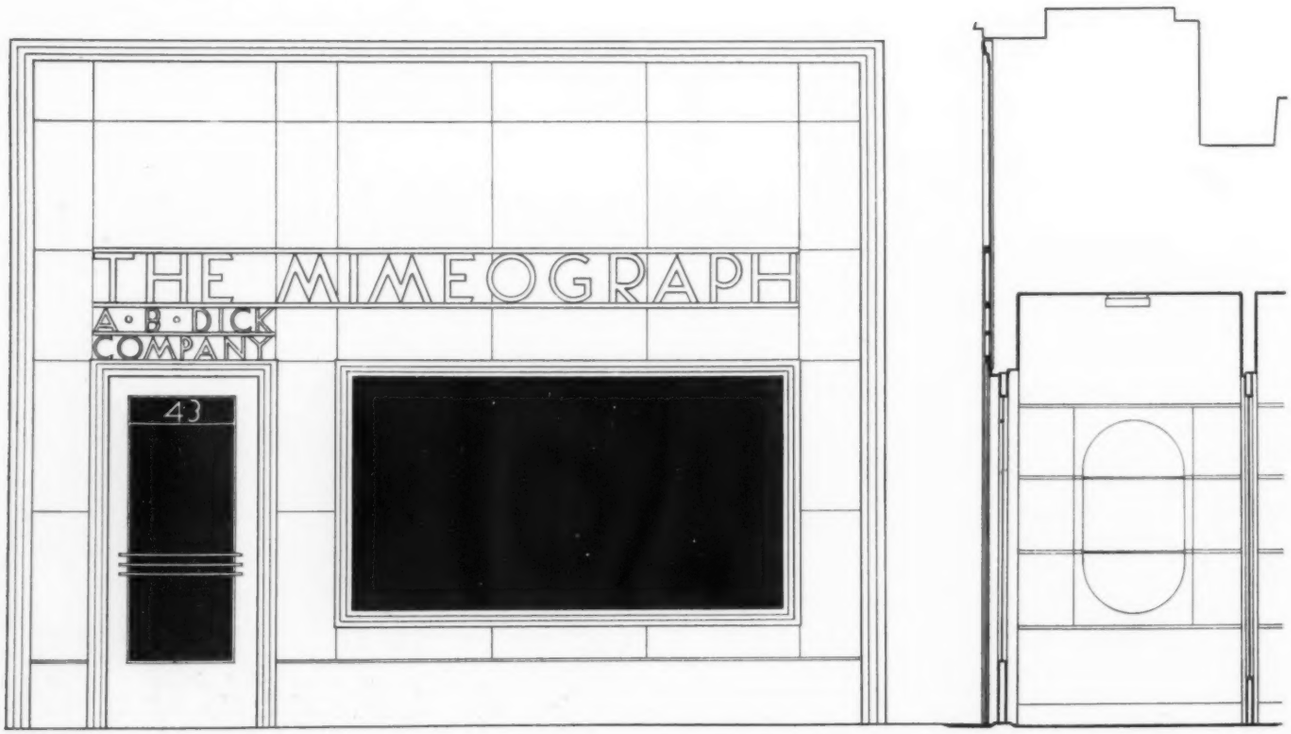
A SALES OFFICE

BY WALTER DORWIN TEAGUE, DESIGNER

A. B. DICK CO. STORE ON MONROE STREET, CHICAGO

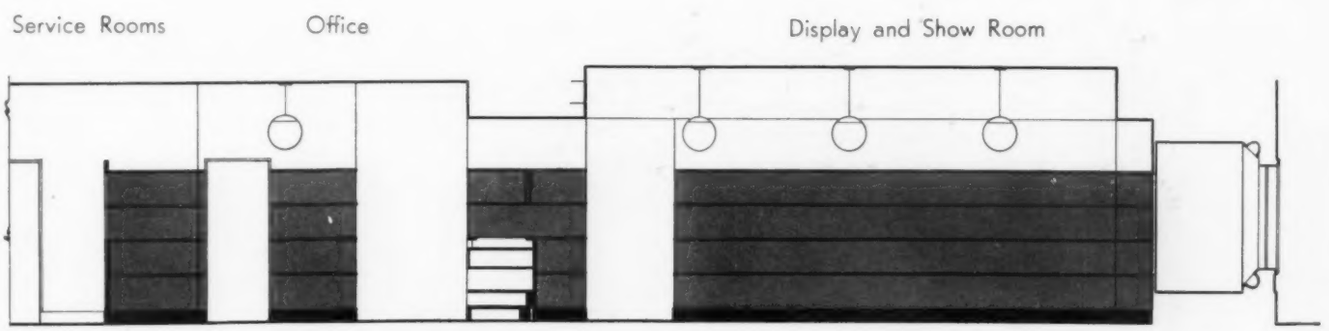
THE MIMEOGRAPH
A. B. DICK COMPANY

DESIGNED BY WALTER DORWIN TEAGUE



Lettering on exterior sign is satin-finish, anodic-treated aluminum ("Alumilite").

The entrance façade is made of black Carrara structural glass with aluminum trim and clear plate glass for the show window and door. Interior plaster walls are painted white and have a Flitch Prima Vera Flexwood wainscot with satin-finish chromium-plated "snap-on" moldings. The flooring is rubber-tile linoleum.



INTERIOR OF DISPLAY ROOM AND OFFICE IN A. B. DICK COMPANY STORE, CHICAGO

The furniture has Prima Vera veneer with satin-finish chromium hardware.

The hanging spherical lighting fixtures and the tubular wall fixtures are by Kurt Versen, Inc.

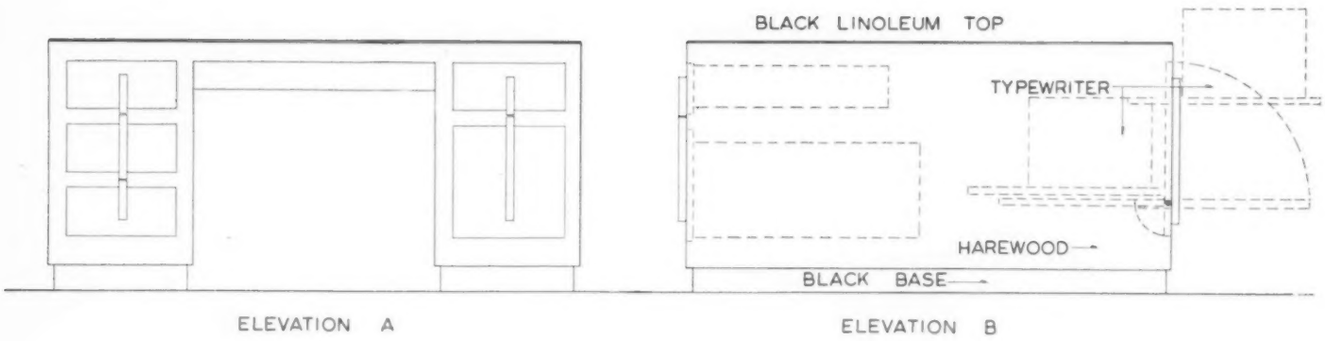
DESIGNED BY WALTER DORWIN TEAGUE

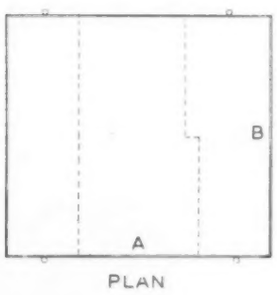
Photographs by Hedrich-Blessing Studio

A. B. DICK CO. STORE ON MONROE STREET, CHICAGO 77

WORKING DRAWINGS OF FURNITURE IN A. B. DICK CO. STORE

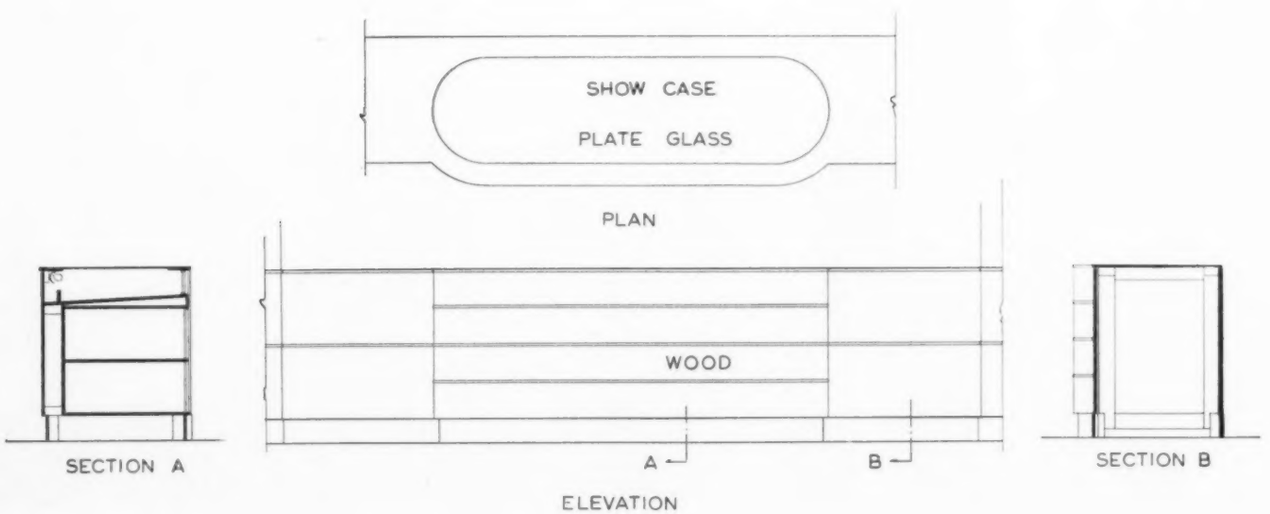
DESIGNED BY WALTER DORWIN TEAGUE





Details of Order Desk and Show Case

Tops of the desk and wrapping table are surfaced in black linoleum; the recessed bases are 3" black rubber tile.



RESIDENTIAL BUILDING SHOWS BRIGHT PROSPECT FOR 1936

By L. SETH SCHNITMAN,

Chief Statistician, F. W. Dodge Corporation

Of all major construction classifications none showed such improvement in 1935 as did residential building. This class of activity reached a total of almost $480,000,000 in the 37 eastern states. In itself this figure is a mere fraction of the annual volume of any of the years of the 1920's. Nevertheless the 1935 contract volume for all types of dwelling units scored an advance, percentage-wise, that is decidedly encouraging.

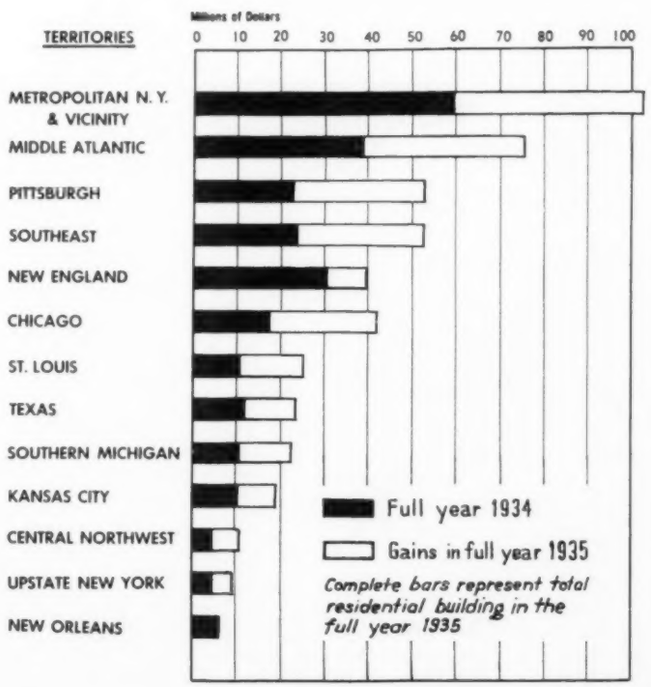
This gain of more than 90 per cent over the total of only $249,000,000 shown for 1934 is all the more significant when considered from the standpoint that virtually every important section of the nation had a share. Sporadic gains in late 1934 and early 1935 gave way to general increases with the result that a firm basis for continued general improvement during 1936 seems to have been definitely laid.

As was the case during the previous cycle of residential building that attained its peak in 1928, the Metropolitan New York district accounted for the largest proportionate share of the total undertaken in the area east of the Rocky Mountains. With somewhat more than $100,000,000 of dwelling construction of all types, this district represented more than one-fifth of the reported total for the 37 states. The Middle Atlantic district, with a total of some $75,000,000, was second in importance in 1935. The Pittsburgh and the Southeastern territories were virtually tied for the distinction of third place. Together these four geographic areas accounted for virtually $290,000,000 or about 60 per cent of the entire 1935 residential volume in the area covered by F. W. Dodge Corporation reports.

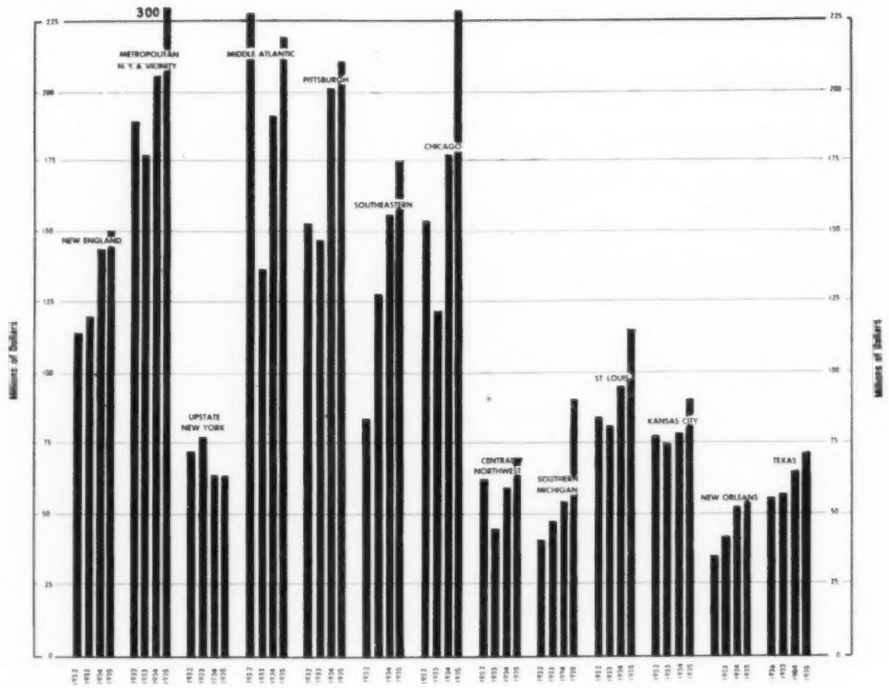
The remaining 40 per cent of the reported volume was shared by the following nine districts in their order of importance: Chicago, New England, St. Louis, Texas, Southern Michigan, Kansas City, the Central Northwest, Upstate New York, and New Orleans. Combined, these nine territories had a population in 1930 of about 59,500,000 while the leading four areas, representing 60 per cent of the 1935 residential volume, had a population in 1930 of but 51,400,000.

The same proportionate distribution of home-building activity is likely to hold for 1936 on a substantially higher total volume of work. The accompanying chart should therefore serve as a fairly reliable index of the distribution of the total for the 37 eastern states which is very likely to exceed $650,000,000 in 1936.

Reports of contemplated work give ample evidence that the 1935 increase in operations is not a flash in the pan. Declines in foreclosures, rising rentals, increased fluidity of mortgage funds, declining vacancies, these provide further bases for believing that residential building will rise to higher levels during 1936, without giving any consideration to governmental slum-clearance efforts that may gain some momentum during the year. Thus 1936 residential prospects are brighter than they have been for any year since 1931. Nor should it occasion large surprise if the total of $811,000,000 reported for 1931 covering the 37 states is approximated again. For this to occur, however, residential building during the latter half of the year would have to be undertaken upon a considerably higher level than appears probable for the first half of 1936.



Construction of all descriptions undertaken during 1935 in the 37 eastern states approximated $1,840,000,000. This was a gain of about 19 per cent over the 1934 volume. Gains over 1934 were shown in each geographic district. Improvement in most territories was chiefly produced by residential gains. Further general improvement in construction appears indicated for 1936. Virtually each district should share in the expected gains. Increased construction, where it occurs, will likely be as a result of private as distinguished from public undertakings.



CONSTRUCTION CONTRACTS IN THE 37 EASTERN STATES

(SOURCE: DODGE STATISTICAL RESEARCH SERVICE)

(Arranged by Geographic Districts)

	—MONTH OF DECEMBER— 1935 Dec. 1-Dec. 15 12 business days	1934 Entire Month 25 business days	MONTH OF NOVEMBER 1935 Entire Month 24 business days
37 EASTERN STATES			
Residential	$ 25,040,400	$ 14,550,500	$ 39,695,200
Non-Residential	61,065,300	28,067,400	68,080,300
Pub. Wks. & Util.	52,277,700	50,067,000	80,339,500
TOTAL	$138,383,400	$ 92,684,900	$188,115,000
NEW ENGLAND STATES			
Residential	$ 2,755,900	$ 2,192,400	$ 4,970,700
Non-Residential	4,658,400	2,749,500	5,140,600
Pub. Wks. & Util.	6,221,900	3,251,500	4,486,300
TOTAL	$ 13,636,200	$ 8,193,400	$ 14,597,600
METROPOLITAN NEW YORK AND VICNITY			
Residential	$ 4,063,300	$ 3,714,600	$ 9,989,700
Non-Residential	11,971,300	3,746,300	12,615,000
Pub. Wks. & Util.	4,896,500	3,679,400	13,206,300
TOTAL	$ 20,931,100	$ 11,140,300	$ 35,811,000
UPSTATE NEW YORK			
Residential	$ 390,100	$ 250,900	$ 951,900
Non-Residential	489,400	1,523,000	1,779,800
Pub. Wks. & Util.	1,882,000	2,106,500	2,859,900
TOTAL	$ 2,761,500	$ 3,880,400	$ 5,591,600
MIDDLE ATLANTIC STATES			
Residential	$ 3,798,600	$ 2,319,800	$ 5,688,500
Non-Residential	8,470,300	4,992,600	6,686,100
Pub. Wks. & Util.	5,520,600	4,510,900	7,263,100
TOTAL	$ 17,789,500	$ 11,823,300	$ 19,637,700
PITTSBURGH TERRITORY			
Residential	$ 1,492,100	$ 1,166,800	$ 3,436,400
Non-Residential	4,445,700	3,183,500	6,529,400
Pub. Wks. & Util.	3,649,900	8,568,700	7,677,300
TOTAL	$ 9,587,700	$ 12,919,000	$ 17,643,100
SOUTHEAST TERRITORY			
Residential	$ 2,211,200	$ 1,512,900	$ 3,266,200
Non-Residential	6,332,600	2,365,800	7,542,800
Pub. Wks. & Util.	2,495,900	2,771,500	7,962,900
TOTAL	$ 11,039,700	$ 6,650,200	$ 18,771,900

	—MONTH OF DECEMBER— 1935 Dec. 1-Dec. 15 12 business days	1934 Entire Month 25 business days	MONTH OF NOVEMBER 1935 Entire Month 24 business days
CHICAGO TERRITORY			
Residential	$ 3,986,000	$ 921,800	$ 3,216,700
Non-Residential	12,626,700	2,510,400	7,934,400
Pub. Wks. & Util.	11,063,600	5,548,300	9,110,100
TOTAL	$ 27,676,300	$ 8,980,500	$ 20,261,200
CENTRAL NORTHWEST TERRITORY			
Residential	$ 385,900	$ 128,400	$ 1,167,000
Non-Residential	2,318,000	518,100	2,450,600
Pub. Wks. & Util.	4,287,600	4,286,200	2,795,900
TOTAL	$ 6,991,500	$ 4,932,700	$ 6,413,500
SOUTHERN MICHIGAN TERRITORY			
Residential	$ 879,200	$ 516,000	$ 2,084,000
Non-Residential	1,562,900	2,389,000	2,945,900
Pub. Wks. & Util.	1,745,300	1,896,100	3,839,300
TOTAL	$ 4,187,400	$ 4,801,100	$ 8,869,200
ST. LOUIS TERRITORY			
Residential	$ 1,398,100	$ 303,600	$ 1,783,100
Non-Residential	2,569,000	944,400	2,856,600
Pub. Wks. & Util.	4,405,800	5,704,300	7,264,600
TOTAL	$ 8,372,900	$ 6,952,300	$ 11,904,300
KANSAS CITY TERRITORY			
Residential	$ 1,834,800	$ 424,500	$ 1,120,300
Non-Residential	3,498,200	1,296,000	3,676,200
Pub. Wks. & Util.	3,406,100	4,001,600	6,676,600
TOTAL	$ 8,739,100	$ 5,722,100	$ 11,473,100
NEW ORLEANS TERRITORY			
Residential	$ 827,500	$ 132,800	$ 367,500
Non-Residential	831,600	454,400	2,919,900
Pub. Wks. & Util.	2,469,700	1,267,400	5,357,300
TOTAL	$ 4,128,800	$ 1,854,600	$ 8,644,700
TEXAS TERRITORY			
Residential	$ 1,017,700	$ 966,000	$ 1,653,200
Non-Residential	1,291,200	1,394,400	5,003,000
Pub. Wks. & Util.	232,800	2,474,600	1,839,900
TOTAL	$ 2,541,700	$ 4,835,000	$ 8,496,100

How appreciable and how general has been the recent improvement in construction is strikingly portrayed by the above table which shows for major geographic districts and principal construction classifications the volume of contract awards during the initial half of December 1935 with comparative data for the months of November 1935 and December 1934.

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Other tubes up to 26" O. D.

Wrought Copper Solder Fittings
¼" to 2" *incl.*

Cast Bronze Solder Fittings
¼" to 10" *incl.*

Cast Bronze Solder Valves
Gate Valves
⅜" to 2" *incl.*

Globe and Stop & Drain Valves
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Architects are invited to use the coupon on this page as a convenient means of obtaining manufacturers' publicaitons describing in detail the products and materials mentioned

A1
STUCCO TEXTURES

The booklet "Portland Cement Stucco," in its revised form, shows how to produce a variety of stucco textures, each step illustrated by photographs and the final texture reproduced in full color. It contains pictures of attractive houses finished in portland cement stucco. Modernizing is illustrated with "before and after" pictures. A full set of specifications for the proper application of portland cement stucco both on new and old buildings completes the story.

A2
NEW EDITION OF INLAND BOOKLET

The Inland Steel Company, Chicago, has published a new edition of their booklet, "Sizes We Roll." It includes complete size data on all sheets, strip, bars, plates, structurals, and semi-finished steel produced by Inland, and also several reference tables useful in ordering steel. A 64-page book, it is of a shape and size convenient for use both in the office and out on the job.

A3

A. C. GILBERT & CO. AIR CONDITIONER

Robert Heller, designer, has styled a new air conditioner for A. C. Gilbert & Co. of New Haven. The unit is chrome and black. Operating on A.C. 60 cycles, 110-120 volts, it has an induction capacitor type motor and consumes 45 watts. The unit holds 3½ quarts of water, and humidifies 12,000 cubic feet of air, enough for the average six-room house or apartment. With bright louvers, and a base container of black enameled copper, the air conditioner has a cover of semi-lustrous processed Alumilite. Scratches, soot, grime, dirt, oil or fingerprints do not mar its finish. Weighing only 9 pounds, it is 8 inches high and 12¾ inches in diameter. It is easily cleaned with soap and water or with such solvents as gasoline, kerosene, and turpentine. It retails at $25.

A4
COP ROLL

Copper sheeting for sub-floor lining is being produced by American Rubber Products Corporation. Made of Anaconda copper and furnished in rolled-up sheets, Cop Roll is said to eliminate, inexpensively, the dangers of dampness to flooring, especially when laid over concrete. Not only dampness but drafts, vermin and insects are effectively stopped.

A5
MORGAN WOODWORK

Examples of English and Norman French woodwork are shown in a catalog of stock designs of the Morgan Woodwork Organization. Doors, windows, stairways, exterior moldings, interior trims, seats and tables, mantels, kitchen cabinets, and china cabinets are among the articles illustrated.

A6
A NEW SHOWER PANEL

Built of heavy gauge rust-proof steel and punched to receive curtain-rod, shower head, water faucets and other fittings, a new shower panel has been designed for converting rolled-rim, leg bathtubs into modernized shower-tub units by the Accessories Company, a division of American Radiator and Standard Sanitary Corporation. The panel is installed on the rim of the wall side of the tub, requiring approximately 2 inches of space from the wall. It is sealed to the tub with patented leak-proof joints and is surrounded on all sides by a special splash molding. The panel, 5 feet 10 inches high by 3 feet wide, is available in the stock colors of white, blue and green but can be furnished in any color at a small additional cost.

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A7
SHEETROCK IN WOOD GRAIN FINISHES

By reproducing on the face of Sheetrock a color-photograph of an actual wood panel, United States Gypsum Company offers Sheetrock in wood grain finishes. As a protective feature the Sheetrock panel is lacquered, thus providing a predecorated board, ready for shellacing and wax or varnish. The new product is available in knotty pine, douglas fir, walnut and matched walnut panels. Among the applications suggested are clubs, hotels and restaurants, shops, offices, display rooms, taverns.

A8
GOLD LEAF IN ARCHITECTURE

Gold leaf can be successfully applied to any building material that will take a coat of paint. Examples of appropriate use of gilding are pictured in a booklet by Hastings & Company, gold leaf manufacturers. The booklet contains an interesting history of gold leaf manufacturing, tracing progress in gold beating to the present methods whereby one ounce of the metal is made to cover over 200 square feet. Information on preparation of various surfaces for gold leaf application, specification of gold leaf, etc., are also given.

A9
SOME NEW APPLICATIONS OF GLASS

The Owens-Illinois Glass Company, Toledo, has perfected its process of drawing glass into fiber so that its application is almost infinite. That company, which recently announced a new type of glass block, places glass in a particularly interesting rôle for the coming year. It becomes practical to think of living in homes and working in buildings of glass block structures insulated against heat and cold by glass "wool," the air entering such buildings through warm air furnaces and ventilating systems cleaned by fibrous glass filters, electrical illumination flowing through wires insulated with glass threads, and carpets, curtains and other articles woven of glass. Glass block enables the entrance of as much as 86 per cent of exterior light without glare, bending of light rays upward, across the room or floorward, controlled by the pattern face of the brick. Diffusion and non-conductivity of glass enables such masonry to reduce temperature due to direct sunlight. In buildings not of glass block, glass "wool" as an insulation to keep rooms warmer in winter and cooler in summer, further acts as a fire, vermin and moisture-proof blanket, cutting heating costs, reducing hazards of fire and protecting wood construction from termites, moisture and other enemies of permanency. Glass wool also has fine acoustical properties and is coming into use as insulation for steam and other pipes.

A10
UNIT HEATERS IN MODERNIZATION

The use of unit heaters in a modern setting is shown by the modernization program just completed by the Copley Square Hotel in Boston. Six Fedders Series 3 Unit Heaters are used for heating, and one cabinet houses the radio loud speaker. The heaters are worked into the decorative scheme by being set into bas-relief panels of modified classical detail. The installation includes circulating ducts within the walls and return grilles at the floor level. Heaters are equipped with three speed controls and are said to provide an unusually economical and effective solution to the heating problem.

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